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**PRELIMINARY ASSESSMENT/
VISUAL SITE INSPECTION**

**NATIONAL STARCH AND CHEMICAL COMPANY
MEREDOSIA, ILLINOIS
ILD 003 934 569**

FINAL REPORT

Prepared for

**U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460**

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EXECUTIVE SUMMARY

PRC Environmental Management, Inc. (PRC), performed a preliminary assessment and visual site inspection (PA/VSI) to identify and assess the existence and likelihood of releases from solid waste management units (SWMU) and other areas of concern (AOC) at the National Starch and Chemical Company (National) facility in Meredosia, Morgan County, Illinois. This summary highlights the results of the PA/VSI and the potential for releases of hazardous wastes or hazardous constituents from SWMUs and AOCs identified.

The National facility manufactures a line of specialty resins, adhesives, and adhesive components. Products manufactured at the facility include water-based white emulsion glue, solvent-based polyacrylic pressure sensitive adhesives, solid "hot glues" used for packaging, and polyacrylic beads used to make hair spray. The facility occupies about 242 acres, of which 86 acres is developed and covered with buildings. National began manufacturing operations at the facility in 1956 and currently employs about 250 people.

On August 15, 1980, National submitted a Notification of Hazardous Waste Activity form to EPA as a hazardous waste generator, and treatment, storage, or disposal facility. The notification listed generation of D001, P054 (ethylene amine), and 16 U-coded wastes. On November 18, 1980, the facility submitted a RCRA Part A permit application to EPA. The application listed the following process codes and design capacities: container storage (S01), 4,000 gallons; tank storage (S02), 30,000 gallons; surface impoundment (T02), 560,000 gallons; incinerator (T03), 60 gallons per hour; and waste pile (S03), undetermined capacity. The S01 code area referred to the Red Label Room Drum Storage Area (SWMU 3), while the S02 code referred to the Waste Polyacrylic Solution Storage Tank (SWMU 1). EPA reviewed the Part A permit application and determined that waste code P054 and process codes S03, T02, and T03 did not need to be listed. On February 6, 1986, and August 2, 1990, National submitted revised Notification of Hazardous Waste Activity forms to EPA. National also submitted a revised Part A permit application on June 30, 1989. In 1989, National submitted to the Illinois Environmental Protection Agency (IEPA) a closure plan dated May 1989 for SWMUs 1 and 3. On July 2, 1991, IEPA approved the closure plan after several revisions and amendments. Closure of SWMUs 1 and 3 is currently underway. The facility currently operates as a large-quantity generator storing wastes for less than 90 days. In addition, the facility has not

generated any of the P- and U-coded wastes listed on Part A permit applications. The facility listed these waste codes based on the raw materials used at the facility instead of analyzing each waste.

In the most recent RCRA compliance inspection conducted on September 8, 1993, IEPA found deficiencies in waste management and determination, hazardous waste manifests, contingency plan, and waste analysis plan. These deficiencies have not been addressed to date. The facility has 35 operating air permits. It is required to have a National Pollutant Discharge Elimination System (NPDES) permit (IL0000621) for combined discharge of pretreated effluent and noncontact cooling water to the Illinois River through outfall 001. No CERCLA activity has occurred at the facility.

The PA/VSI identified the following 16 SWMUs and 2 AOCs at the facility:

Solid Waste Management Units

1. Waste Polyacrylic Solution Storage Tank
2. Satellite Accumulation Areas
3. Red Label Room Drum Storage Area
4. Spent Ethyl Acetate Distillation Units
5. Solvent Storage Tank and Distillation-Extraction Columns
6. On-Site Wastewater Pretreatment Plant
7. Neutralization Tanks
8. Emulsion Wastewater Sumps
9. Hair Spray Resin Sump
10. Former DEC Waste Collection Sump
11. Former Rubber-Lined Pond
12. Chemical Sludge Lagoons
13. Special Waste Storage Area
14. Used Oil Drum Storage Areas
15. Industrial Boilers
16. Open Burning Area

Areas of Concern

1. Acrylic Acid Spill Area
2. Underground Storage Tank (UST) Areas

The Waste Polyacrylic Solution Storage Tank (SWMU 1) is located indoors on a concrete surface. This unit formerly stored waste polyacrylic solution (F003, D001) for greater than 90 days and is undergoing RCRA closure. This unit does not have adequate secondary containment; however, no

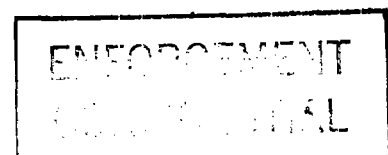
releases from this unit have been documented or observed. The concrete surface in the vicinity of this unit was intact and free of stains. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

The Satellite Accumulation Areas (SWMU 2), the Red Label Room Drum Storage Area (SWMU 3) and the Spent Ethyl Acetate Distillation Units (SWMU 4) are located on a concrete surface. The concrete surface in the vicinity of these units was intact and free of stains. SWMU 3 is undergoing RCRA closure. No releases from these units have been documented or observed. All units have a low potential for release to groundwater, surface water, air, and on-site soils.

The Solvent Storage Tank and Distillation-Extraction Columns (SWMU 5) are located on a concrete surface, and the aboveground storage tank (AST) has secondary containment. The AST was intact and free of corrosion, and the concrete surface in the vicinity of the AST and distillation-extraction columns was intact and free of stains. No releases from this unit have been documented or observed. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

The On-Site Wastewater Pretreatment Plant (SWMU 6) manages industrial wastewaters (nonhazardous) generated throughout the facility. All of the components of this unit are either clay-lined or have adequate secondary containment. The facility personnel periodically inspect all the components of this unit. No releases from this unit have been documented or observed. This unit has a low potential for release to groundwater, surface water, air, or and on-site soils.

The Neutralization Tanks (SWMU 7), Emulsion Wastewater Sumps (SWMU 8), and Hair Spray Resin Sump (SWMU 9) manage nonhazardous industrial wastewaters. SWMU 7 is constructed of steel, while SWMUs 8 and 9 are constructed of concrete. No releases from these units have been observed or documented. However, the steel pipe that discharges emulsion wastewater to SWMU 8, if dislocated, might release emulsion wastewater to an outfall that ultimately discharges noncontact cooling water to the Illinois River. The Former DEC Waste Collection Sump (SWMU 10), and Former Rubber-Lined Pond (SWMU 11) were also used to manage nonhazardous industrial wastewater until 1985 and June 1993, respectively. SWMU 10 is constructed of concrete and contains no waste. Soil sampling conducted in the vicinity of SWMU 11 did not show any contamination. The potential for release from SWMUs 7, and 9 through 11 to groundwater, surface



water, air, or on-site soils is low. The potential for release from SWMU 8 to groundwater is low; to surface water is moderate; and to air or on-site soils is low.

The Chemical Sludge Lagoons (SWMU 12) consist of two inactive lagoons and one active lagoon. All lagoons are clay-lined and flood-protected, and manage nonhazardous grit and sludge from SWMUs 6, 7, and 9. The facility collects quarterly groundwater samples from monitoring wells located upgradient and downgradient of this unit for pH, chemical oxygen demand, and total dissolved and suspended solids. No releases from this unit have been observed or documented. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

The Special Waste Disposal Area (SWMU 13) is located outdoors on an asphalt surface and manages nonhazardous special wastes. The asphalt surface in the vicinity of this unit was intact and free of stains. No releases from this unit have been documented or observed. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

The Used Oil Drum Storage Areas (SWMU 14) manages nonhazardous used oil. The storage area inside the building is located on concrete floor, while the one outside is located on a gravel surface. The potential for release from the outside storage area to on-site soils is moderate, and to groundwater, surface water, or air is low. The potential for release from inside storage area to groundwater, surface water, air, or on-site soils is low.

Industrial Boilers (SWMU 15) have been inactive since August 1991 and formerly managed ethanol-water mixture (D001). They were operated under a permit issued by IEPA, and the facility continuously monitors air emissions from this unit. No releases from this unit have been observed or documented. The potential for releases from this unit to groundwater, surface water, air, or on-site soils is low.

The Open Burning Area (SWMU 16) was used to burn wastes and products between 1968 and 1971. No records exist of specific wastes or products burned, or their volumes. However, the material burned in this area reportedly contained small amounts of hazardous constituents. National ceased open burning when the state stopped permitting this practice. Based on the available information, the potential for release to on-site soils is moderate; and to groundwater, surface water, and air is low.

The Acrylic Acid Spill Area (AOC 1) is the site of a 94000-pound acrylic acid release that occurred between December 17, 1990, and January 2, 1991. The release was discovered on January 2, 1991. On February 6, 1991, National entered into the Voluntary Clean-up Program (VCP) with IEPA and installed groundwater monitoring wells. Based on the sampling results, National concluded that the spill area had been remediated. However, IEPA did not approve the groundwater data since the samples were not collected and analyzed in accordance with the approved quality assurance project plan, and IEPA determined that the facility had not adequately demonstrated that cleanup objectives were met. The potential for release to groundwater and surface water is low because the heavily contaminated soils from the surface have already been excavated; and the potential for release to air is low because the material spilled is nonvolatile. Releases to on-site soils have been documented.

The UST Areas (AOC 2) includes the site of a 15000-gallon UST used between 1962 and 1969 to store flammable solvent and the site of a spill to surrounding soils during removal of 15000-gallon fuel oil USTs located near the railroad siding. The flammable solvent UST was closed in place; however, its integrity during operation was not checked before closure. No soil sampling was conducted to confirm that no releases from the UST had occurred. Therefore, the potential for release to environmental media cannot be determined. In lieu of remediating the fuel oil spill area, the facility requested that IEPA allow monthly sampling and analysis in this area for a year to confirm releases to soils and groundwater. Apparently, IEPA concurred with National on the proposed monitoring activities.

Access to the facility is controlled by fencing along the property boundary. In addition, access is controlled by security guards. The nearest residential area is located within 1,000 feet from the eastern property boundary. The nearest school, Meredosia High School, is located about 2 miles northeast of the facility. The nearest surface water body, the Illinois River, is located within 1,000 feet west of the facility and is used for recreational, agricultural, industrial, and municipal purposes. Groundwater is used as an industrial, agricultural, and private water supply. Residential groundwater wells were identified within a 3-mile radius in both upgradient and downgradient directions. Natural sensitive environments are not located on site; however, the flood plain map identifies the Chemical Sludge Lagoons (SWMU 12) as wetlands, artificial sensitive environments. The nearest natural sensitive environment, wetlands measuring 20 to 25 acres, is located about 3 to 4 miles south of the facility.

Based on the PA/VSF findings, PRC recommends the following:

- Provide adequate secondary containment for the AST and its ancillary equipment in SWMU 1
- Secure the steel pipe that discharges to the Emulsion Wastewater Sumps (SWMU 8) such that it is not accidentally dislocated
- Either move the outside Used Oil Drum Storage Area (SWMU 14) indoors or install a concrete surface beneath this unit to prevent any releases to on-site soils
- Conduct soil sampling at SWMU 16 and analyze the samples for volatile and semivolatile organic compounds and metals. Followup with groundwater sampling if contamination is detected.
- Resample monitoring wells in AOC 1 per IEPA requirements; attain the soil cleanup objectives specified by IEPA; and forward a cleanup report to EPA
- Conduct soil sampling in AOC 2, downgradient of the 15000-gallon UST used for flammable solvents, and analyze the samples for volatile and semivolatile organic compounds to confirm whether releases to the soils have occurred. Forward a report on monitoring activities at fuel oil USTs to EPA.
- PRC recommends no further action for SWMUs 2 through 7, 9 through 13, and 15.

1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC), received Work Assignment No. R05032 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0006 (TES 9) to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in Region 5.

As part of the EPA Region 5 Environmental Priorities Initiative, the RCRA and CERCLA programs are working together to identify and address RCRA facilities that have a high priority for corrective action using applicable RCRA and CERCLA authorities. The PA/VSI is the first step in the process of prioritizing facilities for corrective action. Through the PA/VSI process, enough information is obtained to characterize a facility's actual or potential releases to the environment from solid waste management units (SWMU) and areas of concern (AOC).

A SWMU is defined as any discernible unit at a RCRA facility in which solid wastes have been placed and from which hazardous constituents might migrate, regardless of whether the unit was intended to manage solid or hazardous waste.

The SWMU definition includes the following:

- RCRA-regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells
- Closed and abandoned units
- Recycling units, wastewater treatment units, and other units that EPA has usually exempted from standards applicable to hazardous waste management units
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents. Such areas might include a wood preservative drippage area, a loading or unloading area, or an area where solvent used to wash large parts has continually dripped onto soils.

An AOC is defined as any area where a release of hazardous waste or constituents to the environment has occurred or is suspected to have occurred on a nonroutine and nonsystematic basis. This includes any area where a strong possibility exists that such a release might occur in the future.

The purpose of the PA is as follows:

- Identify SWMUs and AOCs at the facility
- Obtain information on the operational history of the facility
- Obtain information on releases from any units at the facility
- Identify data gaps and other informational needs to be filled during the VSI

The PA generally includes review of all relevant documents and files located at state offices and at the EPA Region 5 office in Chicago.

The purpose of the VSI is as follows:

- Identify SWMUs and AOCs not discovered during the PA
- Identify releases not discovered during the PA
- Provide a specific description of the environmental setting
- Provide information on release pathways and the potential for releases to each medium
- Confirm information obtained during the PA regarding operations, SWMUs, AOCs, and releases

The VSI includes interviewing appropriate facility staff; inspecting the entire facility to identify all SWMUs and AOCs; photographing all visible SWMUs; identifying evidence of releases; making a preliminary selection of potential sampling parameters and locations, if needed; and obtaining additional information necessary to complete the PA/VSI report.

This report documents the results of a PA/VSI of the National Starch and Chemical Company (National) facility (EPA Identification No. ILD 003 934 569) in Meredosia, Morgan County, Illinois.

The PA was completed on August 20, 1993. PRC gathered and reviewed information from the Illinois Environmental Protection Agency (IEPA) and from EPA Region 5 RCRA files. Additional information was obtained from Federal Emergency Management Agency (FEMA), U.S. Department of Agriculture (USDA), U.S. Department of Commerce (USDC), U.S. Department of Interior (USDI), and U.S. Geological Survey (USGS). The VSI was conducted on August 26, 1993. It included interviews with facility representatives and a walk-through inspection of the facility. PRC identified 16 SWMUs and 2 AOCs at the facility.

The VSI is summarized and 24 inspection photographs are included in Appendix A. The photographs have been renumbered; thus their numbers differ from the photograph numbers in the VSI field notes, which are included in Appendix B.

2.0 FACILITY DESCRIPTION

This section describes the facility's location; past and present operations; waste generating processes and waste management practices; history of documented releases; regulatory history; environmental setting; and receptors.

2.1 FACILITY LOCATION

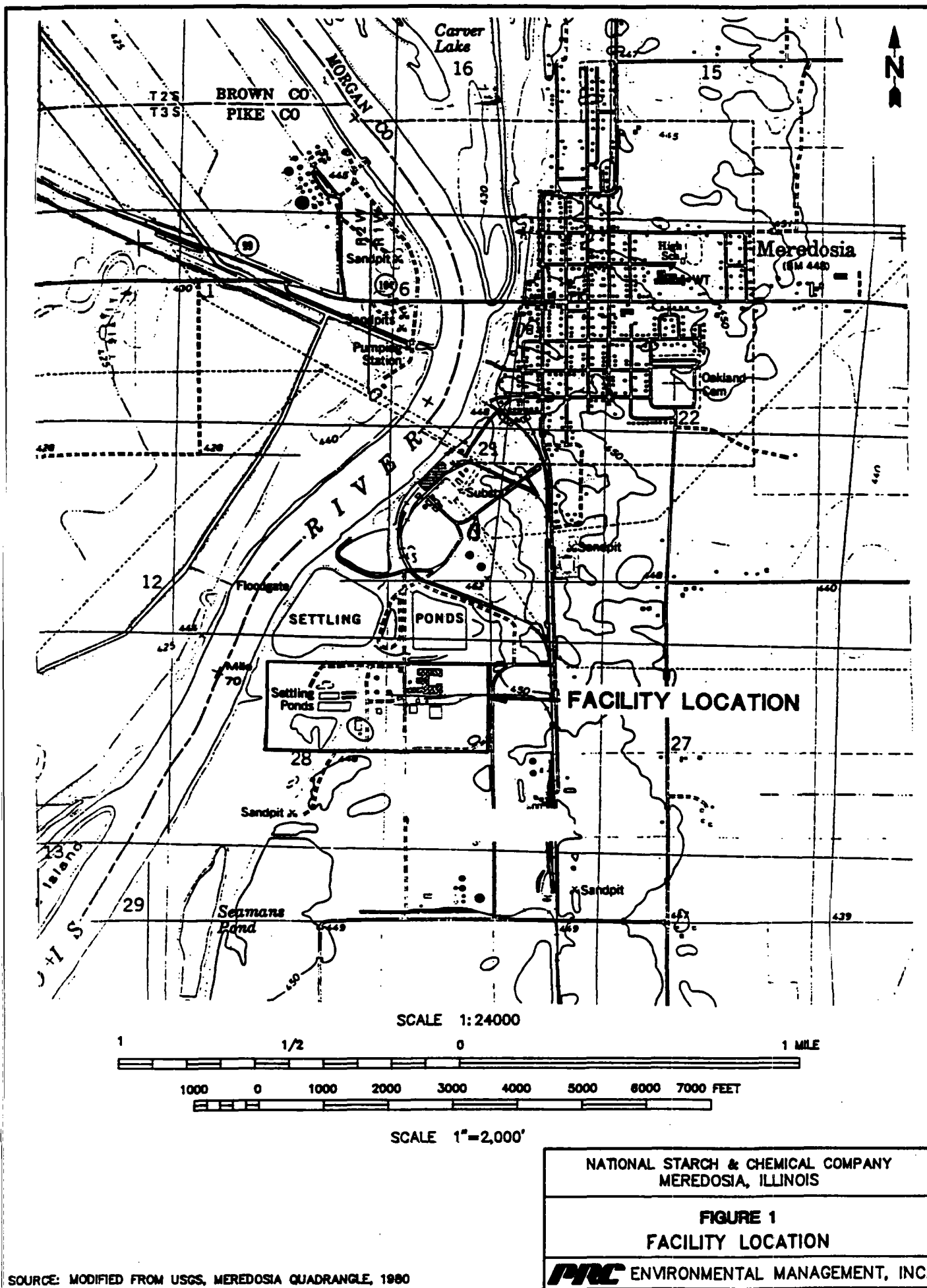
The National facility is located on South Washington Street in Meredosia, Morgan County, Illinois. Meredosia is located about 20 miles northwest of Jacksonville, Illinois, the nearest city. Figure 1 shows the location of the facility in relation to surrounding topographic features (latitude 39°48'16"N and longitude 90°34'25"W). The facility occupies 242 acres in an agricultural and residential mixed-use area.

The facility is bordered on the north by a power plant; on the east by Route 1 and residential area; on the south by farm land; and on the west by the Illinois River.

2.2 FACILITY OPERATIONS

The National facility manufactures a line of specialty resins, adhesives, and adhesive components. Products manufactured at the facility include water-based white emulsion glue, solvent-based polyacrylic pressure sensitive adhesives, solid "hot glues" used for packaging, and polyacrylic beads used to make hair spray (IEPA 1989a). Until early 1993, the facility also manufactured diethylaminoethyl chloride hydrochloride (DEC), used for starch modification and as an intermediate for pharmaceuticals.

Products are formulated using bulk chemical tanks, blending tanks, reactors, and distillation units. The process area of the facility consists of several batch reactors that, together with weighing tanks and instrumentation reactors operate as batch chemical systems. The reactors are fed by bulk tanks and blending tanks. The reaction processes are controlled using computers in two control rooms.



The reactors where products are manufactured are located in the A-wing and B-wing of the facility. Nine of the 10 reactors in the A-wing use water-based compounds, and 1 reactor in the A-wing and 5 in the B-wing use organic solvents in the manufacturing operations. Facility emissions mainly consist of either organic vapors or particulate matter. Particulate emission sources include two resin dryers with cyclone separators, a lime storage silo, an adhesive dusting system, and three gas-oil boilers. The company has recently petitioned to participate in the early reduction program for organic material emissions listed in the Clean Air Act (CAA) of 1990 (IEPA 1992b). In early 1993, National discontinued DEC manufacturing operations and subsequently reduced toluene emissions by 124,735 pounds for an overall reduction of 90 percent.

Raw materials are stored in several aboveground storage tanks (AST) and 55-gallon drums. Raw materials used in the manufacturing processes at the facility include acetone, acrylamide, acrylic acid, acrylonitrile, cresol, hexahydrobenzene, dibutylphthalate, 1,1,-dichloroethylene, acetic acid, ethyl acrylate, formaldehyde, maleic anhydride, methanol, ethanol, ethyl acetate, and isopropyl acetate. Several other raw materials are used at the facility for cleaning and wastewater pretreatment operations. These include nitric acid, sodium hydroxide, alum, lime, and polyelectrolytes. The facility currently uses 2 275-gallon ASTs to store diesel and gasoline.

National acquired the property in 1954, began constructing the facility around 1955, and began manufacturing operations at the facility in 1956. National has expanded the facility several times since its inception. Prior to 1955, the land was used for agricultural purposes. The facility occupies about 242 acres, of which 86 acres is covered with buildings, and employs about 250 people.

The facility uses a 500-gallon underground storage tank (UST) to store propane. National removed several USTs that were used to store fuel oil and spent isopropyl acetate (IPA), ethanol, and water mixture (see Sections 2.4 and 4.0).

2.3 WASTE GENERATION AND MANAGEMENT

This section describes waste generation and management at the National facility. The facility's SWMUs are identified in Table 1. The facility layout, including SWMUs and AOCs, is shown in Figure 2. The facility's waste streams are summarized in Table 2.

TABLE 1
SOLID WASTE MANAGEMENT UNITS

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit*	Status
1	Waste Polyacrylic Solution Storage Tank	Yes	Active; formerly used to store waste polyacrylic solution (F003, D001) for greater than 90 days; currently undergoing RCRA closure
2	Satellite Accumulation Areas	No	Active; used for accumulating waste polyacrylic solution (F003, D001), special wastes (nonhazardous), and used oil (nonhazardous)
3	Red Label Room Drum Storage Area	Yes	Active; formerly used to store waste polyacrylic solution (F003, D001) for greater than 90 days; currently undergoing RCRA closure
4	Spent Ethyl Acetate Distillation Units	No	Active; used for distilling spent ethyl acetate (F003, D001)
5	Solvent Storage Tank and Distillation-Extraction Columns	No	Active; used to store and separate IPA, ethanol, and water
6	On-Site Wastewater Pretreatment Plant	No	Active; used to manage industrial wastewaters (nonhazardous)
7	Neutralization Tanks	No	Active; used to neutralize waste acidic solution (industrial wastewater, nonhazardous)

TABLE 1 (Continued)
SOLID WASTE MANAGEMENT UNITS

<u>SWMU Number</u>	<u>SWMU Name</u>	<u>RCRA Hazardous Waste Management Unit^a</u>	<u>Status</u>
8	Emulsion Wastewater Sumps	No	Active; used to discharge emulsion wastewater (industrial wastewater, nonhazardous)
9	Hair Spray Resin Sump	No	Active; used to discharge wastewater from hair spray resin production operations
10	Former DEC Waste Collection Sump	No	Inactive since June 1993; formerly used to collect spills in the DEC production area
11	Former Rubber-Lined Pond	No	Inactive since 1985; formerly used to neutralize wastewater containing ethylene amine
12	Chemical Sludge Lagoons	No	Active; used to manage grit and sludge from SWMUs 6, 7, and 9
13	Special Waste Storage Area	No	Active; used to manage special wastes (nonhazardous)
14	Used Oil Drum Storage Areas	No	Active: used to store used oil (nonhazardous)
15	Industrial Boilers	No	Inactive since August 1991; formerly used to burn ethanol-water mixture (D001) as fuel
16	Open Burning Area	No	Inactive since 1971; formerly used to burn unknown wastes

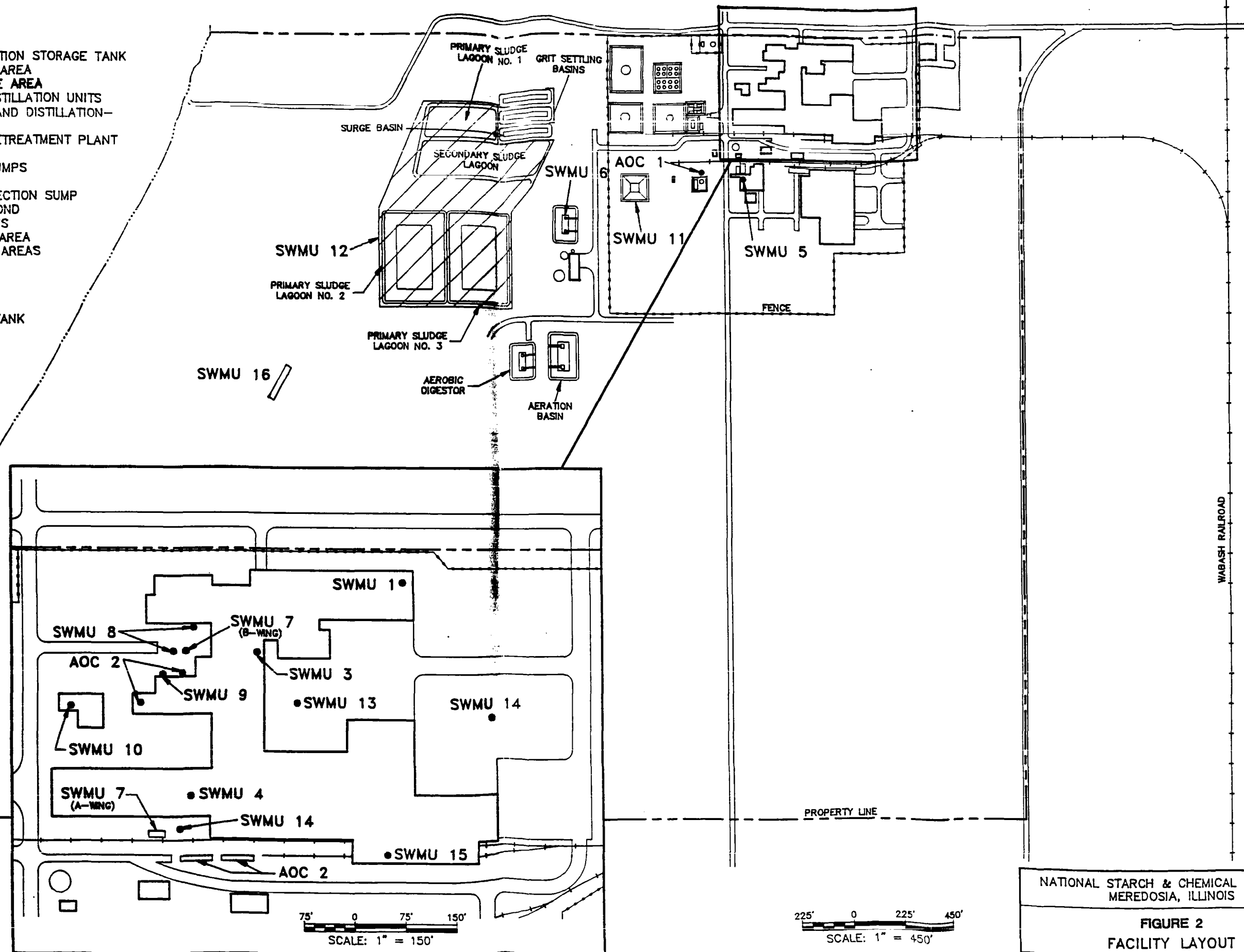
Note:

^a A RCRA hazardous waste management unit is one that currently requires or formerly required submittal of a RCRA Part A or Part B permit application.

SOURCE: MODIFIED FROM NATIONAL 1993

- LEGEND**
- SWMU 1 WASTE POLYACRYLIC SOLUTION STORAGE TANK
 - SWMU 2 SATELLITE ACCUMULATION AREA
 - SWMU 3 RED LABEL DRUM STORAGE AREA
 - SWMU 4 SPENT ETHYL ACETATE DISTILLATION UNITS
 - SWMU 5 SOLVENT STORAGE TANK AND DISTILLATION-EXTRACTION COLUMN
 - SWMU 6 ON-SITE WASTEWATER PRETREATMENT PLANT
 - SWMU 7 NEUTRALIZATION TANKS
 - SWMU 8 EMULSION WASTEWATER SUMPS
 - SWMU 9 HAIR SPRAY RESIN SUMP
 - SWMU 10 FORMER DEC WASTE COLLECTION SUMP
 - SWMU 11 FORMER RUBBER-LINED POND
 - SWMU 12 CHEMICAL SLUDGE LAGOONS
 - SWMU 13 SPECIAL WASTE STORAGE AREA
 - SWMU 14 USED OIL DRUM STORAGE AREAS
 - SWMU 15 INDUSTRIAL BOILERS
 - SWMU 16 OPEN BURNING AREA
- AOC 1 ACRYLIC ACID SPILL AREA
AOC 2 UNDERGROUND STORAGE TANK (UST) AREAS

NOTE: SWMU 2 IS LOCATED THROUGHOUT THE FACILITY.



NATIONAL STARCH & CHEMICAL COMPANY
MEREDOSIA, ILLINOIS

FIGURE 2
FACILITY LAYOUT

PRC ENVIRONMENTAL MANAGEMENT, INC.

TABLE 2
SOLID WASTES

<u>Waste/EPA Waste Code^a</u>	<u>Source</u>	<u>Solid Waste Management Unit^b</u>
Waste polyacrylic solution /F003, D001	Lacquer production, batch sampling and laboratory testing operations	1, 2, and 3
Spent ethyl acetate/F003, D001	Hair spray manufacturing	4
Spent IPA, ethanol, and water/D001	Hair spray manufacturing	5
Ethanol and water mixture/D001	Distillation of spent isopropyl acetate, ethanol, and water	5 and 15
Spent parts cleaning solvent/D001	Maintenance operations	None
Industrial wastewater/NA	Various (see Section 2.3)	5, 6, 7, 8, 9, 10, and 11
Waste cylindrical filter cartridges/NA	Lacquer production operations	2 and 13
DEC waste/NA ^c	DEC production	11
Grit, chemical, and biological sludge/NA	Wastewater pretreatment operations	12
Solid adhesive waste/NA	Lacquer and adhesive manufacturing operations	2 and 13
Solidified waste resin/NA	Paper coating production, storage, shipping and handling operations	2 and 13

TABLE 2 (Continued)**SOLID WASTES**

<u>Waste/EPA Waste Code^a</u>	<u>Source</u>	<u>Solid Waste Management Unit^b</u>
Used oil/NA	Maintenance operations	2 and 14
Waste paper filter and unusable final product/NA	Unknown	16

Notes:

- ^a Not applicable (NA) designates nonhazardous waste.
- ^b "None" indicates that the waste stream is not managed on site.
- ^c No longer generated.
-

Waste polyacrylic solution (F003, D001) is generated in the lacquer production unit. It consists of off-specification lacquer, batch remnants following formulation changes (there are about 22 formulations), sample residuals, and ethyl acetate and lacquer rinsate from reactor cleanings (IEPA 1993b). The reactors are cleaned with ethyl acetate approximately weekly or between different product batches. Most of the waste is pumped directly from the reactors (with 2000- and 4000-gallon capacities each) into the Waste Polyacrylic Solution Storage Tank (SWMU 1). Waste polyacrylic solution (F003, D001) generated during batch sampling activities and laboratory testing is collected in Satellite Accumulation Areas (SWMU 2), which consists of either 5-gallon buckets or 55-gallon drums. According to the facility representative, these buckets and drums are in 19 locations in the lacquer production unit and 1 location in the laboratory area. Waste polyacrylic solution from SWMU 2 is vacuum pumped into SWMU 1. Waste polyacrylic solution (F003, D001) that cannot be pumped into SWMU 1 is stored in 55-gallon drums in the Red Label Room Drum Storage Area (SWMU 3). Waste polyacrylic solution was analyzed for organics on June 4, 1990; it was found to be ignitable and to contain hazardous concentrations of ethyl acetate. About 8,000 gallons of this waste is generated every month. Waste polyacrylic solution (F003, D001) is removed from SWMU 1 every 30 to 90 days depending on the rate of generation, and transported off site by Heritage Environmental, Inc. (ILD 085 349 264), to its Lemont, Illinois, facility for incineration and heat recovery.

Spent ethyl acetate (F003, D001) is generated during production and drying of polyvinyl acetate (PVA) spheres that are used in hair spray manufacturing. It is collected in a surge tank and continuously reclaimed on site using the Spent Ethyl Acetate Distillation Units (SWMU 4). The reclaimed ethyl acetate is reintroduced into the PVA manufacturing process, and the water fraction is discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6). The distillation process does not generate any still bottoms. The surge tank is considered as part of SWMU 4.

Production of Amphomer Pearls or wet PVA spheres that are used in hair spray manufacturing generates a mixture of spent IPA, ethanol, and water (D001). Water is used to wash IPA, ethanol, and caustic (sodium hydroxide) from the polymer after it is "pearlized" (formed into spheres). The solution, consisting of approximately 20 percent IPA, 30 percent ethanol, and 50 percent water, is initially stored in a 12000-gallon AST until it is reclaimed in the Solvent Storage Tank and Distillation-Extraction Columns (SWMU 5). The solution is initially passed through a distillation

column wherein the water is stripped from the solution. The water stripped solution is passed through an extraction column wherein water is introduced to separate IPA from the solution. The ethanol-water mixture from the extraction column is again sent to the distillation column for separation of ethanol from water. Wastewater from solvent recovery operations is sent to the On-Site Wastewater Pretreatment Plant (SWMU 6). The reclaimed IPA and ethanol is recycled by reintroducing into the manufacturing process. About 10,000 gallons of spent IPA, ethanol, and water (D001) is generated every month. Before August 1991, National used to burn the ethanol-water mixture (D001) as fuel in the Industrial Boilers (SWMU 15), instead of separating them in a distillation column. National formerly stored spent IPA, ethanol, and water (F003, D001) in two 15000-gallon USTs. These USTs were removed in February 1992, and the soil samples collected during removal showed no contamination.

Spent parts cleaning solvent (S-K 105, consisting of petroleum naphtha with a flash point of 105 °F) (D001) results from routine maintenance of equipment and machinery. Safety-Kleen Corporation (Safety-Kleen) routinely services the parts washer and transports the waste to its facility in Dolton, Illinois, for reclamation. The facility does not use any manifests to ship this waste.

Industrial wastewaters (nonhazardous) generated at the facility include (1) wastewater from SWMUs 4 and 5; (2) wastewater from soaking waste cylindrical cartridges; (3) waste acidic solution; (4) emulsion wastewater; (5) waste caustic solution; (6) wastewater from raw material and waste storage drum cleaning operations; (7) wastewater from hair spray resin manufacturing operations; (8) wastewater from polyacrylic contaminated hose cleaning bin; (9) wastewater from cleaning floors throughout the facility; and, (10) tank truck washings. The facility formerly generated wastewater containing ethylene amine, which is also considered as part of industrial wastewater. All industrial wastewater (nonhazardous) is managed in the On-Site Wastewater Pretreatment Plant (SWMU 6), and its specific sources are discussed below. National generates about 0.41 million gallons per day (mgd) of industrial wastewater during facility operations, and it discharges the pretreated effluent to the Illinois River under a National Pollutant Discharge Elimination System (NPDES) permit (IL0000621).

Waste cylindrical filter cartridges (nonhazardous) resulting from screening gel (polymer) solids from water emulsions and polymer solutions. Filter cartridges are approximately 3 feet long and 3 inches in diameter. These cartridges are soaked in water for several hours to strip ethyl acetate residues

prior to off-site disposal. This waste is accumulated in 30- and 55-gallon drums in the Satellite Accumulation Areas (SWMU 2) and transferred to roll-off boxes in the Special Waste Storage Area (SWMU 13). Wastewater generated from soaking filter cartridges is discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6). National generates about 350 waste cylindrical filter cartridges (nonhazardous) every month. This waste was last analyzed on September 24, 1990, and was found to be nonhazardous. It is disposed of as a special waste at Pike County Landfill (ILD 149 816 001) in Baylis, Illinois, under a special waste permit (Permit No. 931566) issued by IEPA.

The facility uses nitric acid solution, containing small amounts of acetic acid, to clean the polymerization (white glue) reactors containing polyvinyl acetate residues. After the reactors are cleaned, the solution is pumped back into two 6000-gallon ASTs and reused until its pH exceeds 3 or 4. When its pH exceeds 3 or 4, the solution is drained into one of the Neutralization Tanks (SWMU 7) before discharging through drainage trenches to the On-Site Wastewater Pretreatment Plant (SWMU 6). The Neutralization Tanks (SWMU 7) are cleaned periodically, and the chemical sludge (nonhazardous) accumulated in the tanks is transported in trucks to the Chemical Sludge Lagoons (SWMU 12). Waste acidic solution and chemical sludge were last analyzed on June 6, 1985, and found to be nonhazardous. Before 1980, the waste acidic solution was also neutralized in an underground, open steel tank which is now part of the Solvent Storage Tank and Distillation-Extraction Columns (SWMU 5).

The facility uses basket screens to filter solids and protect all the pumps used to pump the finished emulsions. The screens are submersed in a steel bin containing nitric acid solution to remove emulsion solids glued to the screens. The waste acidic solution (nonhazardous) in the bin is periodically emptied into the Neutralization Tanks (SWMU 7), which discharge to the On-Site Wastewater Pretreatment Plant (SWMU 6).

Emulsion wastewater (nonhazardous) results from manufacturing of water-based emulsion polymers. About 300 gallons per minute of this waste is generated. It is discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6) through the Emulsion Wastewater Sumps (SWMU 8) and drainage trenches. Emulsion wastewater was last analyzed on July 17, 1989, and was found to be nonhazardous.

The facility uses Oakite caustic solution for weekly cleaning of the white glue reactor vessels used in polymerization and steam stripping operations. After the reactor vessels are cleaned, the caustic solution is pumped back to a 6000-gallon AST and reused until its pH falls to approximately 10. When its pH reaches 10, the solution is discharged through a trench and a flow-through sump to the On-Site Wastewater Pretreatment Plant (SWMU 6). The trench and flow-through sump are considered as part of SWMU 6. Approximately 2,000 gallons of waste caustic solution (nonhazardous) is generated each month.

Empty drums containing raw material and waste residues are cleaned in a steel hood in the hair spray resin manufacturing area. Wastewater from this operation is directly discharged through drainage trenches to the On-Site Wastewater Pretreatment Plant (SWMU 6).

Wastewater from steam stripping during hair spray resin production operation is drained to the Hair Spray Resin Sump (SWMU 9), for solids settling before discharging to the On-Site Wastewater Pretreatment Plant (SWMU 6). After the solids settle, the resulting chemical sludge (nonhazardous), is mechanically removed and transported in a truck to the Chemical Sludge Lagoons (SWMU 12).

The facility cleans hoses contaminated with polyacrylic solution in a steel bin of steaming water containing caustic constituents. The resulting wastewater is discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6) through drainage trenches.

Wastewater from cleaning floors throughout the facility is directly discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6) through floor drains and drainage trenches.

Tank truck wash water, or "white glue wastewater," results from rinsing of National's tank trucks containing various products such as polyvinyl acetate. Tank truck wash water generated and stored initially at either Cambridge Transfer, Inc., or at Meredosia Tank Cleaners in Meredosia, Illinois, and transported in trucks to the On-Site Wastewater Pretreatment Plant (SWMU 6). Between July 26, 1993, and August 13, 1993, the facility received 22 tank trucks (5,000 gallons each) of wash water from a holding lagoon at Cambridge Transfer, Inc. This waste is considered nonhazardous based on an analysis performed on April 10, 1989. The facility has an IEPA permit to accept tank truck washings as special waste.

Until 1980, the facility treated wastewater containing ethylene amine in the Former Rubber-Lined Pond (SWMU 11) in conjunction with the On-Site Wastewater Pretreatment Plant (SWMU 6). The facility stopped using ethylene amine in 1980.

DEC waste resulted from filtration and spillage during the production and filtration of DEC. This waste was accumulated in the Former DEC Waste Collection Sump (SWMU 10) and discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6). The facility stopped producing DEC in June 1993 and consequently stopped generating DEC waste. Approximately 110 gallons per year of DEC waste were generated. This waste is considered nonhazardous based on an analysis performed on June 6, 1985.

Grit, chemical sludge, and biological sludge are generated in the primary clarifiers and aerobic digester of the On-Site Wastewater Pretreatment Plant (SWMU 6). The chemical and biological sludges were last analyzed on April 23, 1986, and January 27, 1988, and were found to be nonhazardous. All three wastes are disposed in the Chemical Sludge Lagoons (SWMU 12). The rate of generation for these wastes is unknown, and it varies significantly.

Solid adhesive waste (nonhazardous), such as hardened resins, wax and ethylene-vinyl acetate copolymer (EVA), results from filtration, spills, and off-specification production batches (hot glue, polymerized polyacrylic resin, and dried white glue). This waste is accumulated in 55-gallon drums in the Satellite Accumulation Areas (SWMU 2), and transferred to roll-off boxes in the Special Waste Storage Area (SWMU 13). About 4 cubic yards of this waste is generated every week. This waste was last analyzed on November 13, 1990, and found to be nonhazardous. It is disposed of at Pike County Landfill under a special waste permit (Permit No. 800706) issued by IEPA.

Solidified waste resin (nonhazardous) is generated during paper coating manufacturing and product storage, shipping, and handling operations. This waste is stored in 55-gallon drums in the Satellite Accumulation Areas (SWMU 2) and transferred to the roll-off boxes in the Special Waste Storage Area (SWMU 13). This waste is disposed of at Pike County Landfill under a special waste permit (Permit No. 931566) issued by IEPA. The rate of generation of this waste is unknown.

The facility generates used oil (nonhazardous) during vehicle and equipment maintenance. This waste is accumulated in 55-gallon drums in the Satellite Accumulation Areas (SWMU 2), and stored in the Used Oil Drum Storage Areas (SWMU 14). About 75 gallons of this waste is generated every month. Safety-Kleen routinely collects this waste and transports it to its facility in Dolton, Illinois, for fuel blending. A waste analysis conducted on October 8, 1990, indicated that this waste is nonhazardous. Previous shipments of this waste were determined to be hazardous due to ignitability and lead content (D001, D008). According to the facility representative, the previous shipments exhibited hazardous characteristics because the facility personnel inadvertently mixed spent solvents from parts cleaning into used oil storage drums. However, the specific source of lead is not determined. This waste was last shipped off site on November 10, 1992.

Between 1968 and 1971, National used to burn waste paper filter and unusable final products in the southwestern portion of the facility, the Open Burning Area (SWMU 16). The source and characteristics of these wastes are unknown. These products reportedly contained small amounts of hazardous constituents.

2.4 HISTORY OF DOCUMENTED RELEASES

This section discusses the history of documented releases to groundwater, surface water, air, and on-site soils at the facility.

On October 4, 1977, about 500 to 1,000 gallons of fuel oil was spilled into Illinois River. According to the IEPA Emergency Action Control (EAC) report, EPA and U.S. Coast Guard took necessary action to contain the spill. Information regarding the source of spill, and the actions taken to contain the spill was not available in IEPA files. The EAC report recommended no further action (IEPA 1977).

On March 4, 1980, an unknown quantity of acrylonitrile reportedly leaked from a pipe connected to a 10000-gallon AST and was released to on-site soils. The affected soils were reportedly removed and flushed with water. The resulting wastewater was treated in the On-Site Wastewater Pretreatment Plant (SWMU 6). Both IEPA and the facility performed investigative sampling. Based on the sampling results, IEPA required no further action (IEPA 1980; 1984b).

A 30-cubic-yard dumpster containing special waste was reportedly stolen over the weekend of March 29 to April 2, 1984. The facility notified the local police department and IEPA. The dumpster was never found (IEPA 1984a).

On February 4, 1985, about 1,000 gallons of nitric acid overflowed from a 10000-gallon AST inside the facility onto the floor, causing a nitric acid plume in the air. The tank overflowed during cleanup of PVA in the tank. The facility added water and sodium carbonate to the spilled material and discharged it to the On-Site Wastewater Pretreatment Plant (SWMU 6). The nitric acid plume was reportedly dissipated in a few minutes. The facility notified IEPA of the release; and subsequently IEPA recommended no further action (IEPA 1985a).

On October 21, 1987, sulfur dioxide from a storage tank was released to the air as a result of an operating error. Reportedly, the sulfur dioxide plume dissipated a few minutes after the release. The facility notified IEPA of the release; IEPA recommended no further action (IEPA 1987a).

On April 19, 1988, about 3,500 pounds of 100 percent sodium hydroxide solution was released to the Illinois River when the bleed-off valve of a container truck failed. The facility shut the valve off immediately and stopped the leakage. The released material was determined to be irrecoverable, and IEPA recommended no further action (IEPA 1988c).

Between December 17, 1990, and January 2, 1991, about 94,000 pounds of acrylic acid was released from an AST to on-site soils when pump flange failed (Acrylic Acid Spill Area, AOC 1). As a result, National entered into the Voluntary Clean-up Program (VCP) with IEPA on February 6, 1991 (IEPA 1992a). This incident is discussed in detail in Section 4.0.

On July 29, 1991, about 13,500 pounds of tert-butyl-peroxy-2-ethylhexanoate was combusted when a fire occurred at a facility building, the Morton Building, about 30 feet by 60 feet in area. The fire was extinguished; but a large quantity of unstable material remained. The fire department and the facility decided to burn the remaining material using controlled burn procedure by installing sand berm around the building. Soil samples collected from the bermed area were reportedly clean. The facility notified IEPA of the incident and submitted soil sampling results to IEPA. IEPA recommended no further action (National 1991).

In December 1991 and February 1992, the facility removed four 15000-gallon fuel oil USTs located near the rail road siding. Fuel oil was released to on-site soils during the UST removal operations in December 1991 (National 1992a). Also, contamination was observed during the UST removal in February 1992. These areas are currently being monitored through collection of groundwater samples. This incident is discussed as UST Areas (AOC 2) in Section 4.0.

On March 2, 1992, a malfunctioning meter caused a tank consisting of solvent-based polymer solution to overflow. The solvent was isopropyl acetate containing 3 percent benzene. The material was released over the roof of the building to the ground. Based on the volume spilled, National estimated that about 40 pounds of benzene was released. Reportedly, much of the solvent was released to the air before the material reached to the ground because of the solution's elevated temperature. The facility contained the spill material, excavated and flushed the affected soils with water, and treated the resulted wastewater in the On-Site Wastewater Pretreatment Plant (SWMU 6). No soil samples were collected to ensure that all contamination was removed. The facility notified IEPA of the release and actions taken; IEPA required no further action (IEPA 1993a).

2.5 REGULATORY HISTORY

On August 15, 1980, National submitted a Notification of Hazardous Waste Activity form to EPA reporting that the facility was generating, storing, treating, and disposing of hazardous waste. The notification listed D001, P054 (ethylene amine), and 16 U-coded wastes (National 1980a). On November 18, 1980, the facility submitted a RCRA Part A permit application to EPA. The application listed the following process codes and design capacities: container storage (S01), 4,000 gallons; tank storage (S02), 30,000 gallons; surface impoundment (T02), 560,000 gallons; incinerator (T03), 60 gallons per hour; and waste pile (S03), undetermined capacity. The container storage (S01) area referred to the Red Label Room Drum Storage Area (SWMU 3), while the tank storage (S02) referred to the Waste Polyacrylic Solution Storage Tank (SWMU 1). The incinerator (T03) referred to the Industrial Boilers (SWMU 15). The application indicated that the surface impoundment (T02) and waste pile (S03) were included for emergency treatment and containment of ethylene amine product (P054) leaks and spills. The surface impoundment referred to the Former Rubber-Lined Pond (SWMU 11), and the waste pile has never been active. The application also listed the following estimated annual generation rates 500 gallons of P054 waste, 77,500 gallons of 16 U-coded wastes,

and 1,200,000 gallons of D001 wastes. All of the U-coded wastes and about 300,000 gallons per year of D001 wastes were reportedly managed in the container storage area (S01), and about 900,000 gallons per year of D001 wastes were managed in the incinerator (T03). In addition, the application listed the following permits: 1 NPDES permit (ILD000621), 7 special waste permits, and 37 air permits (National 1980b). Although listed on the Part A permit application, the facility has not generated any of the P- and U-coded wastes. The facility listed these waste codes based on the raw materials used at the facility instead of waste analyses.

EPA determined that waste code P054 and process codes S03 and T02 did not need to be listed on the Part A permit application since the waste was not generated and managed on a regular basis. Based on the revised Part A permit application, EPA sent National a letter on August 15, 1984, inquiring whether hazardous wastes were treated in the incinerator (T03) and, if so, to comply with EPA incinerator requirements (EPA 1984a). On August 28, 1984, the facility responded by stating that the waste was hazardous because of its ignitable characteristics and that it was co-fired with natural gas in fire-tube package boilers, the Industrial Boilers (SWMU 15), for heat recovery. The facility also stated that this operation was conducted under IEPA Permit No. 137861AAC which limited the solvent-gas ratio, and the composition of solvent fuel used in boiler operation (IEPA 1983b; National 1984). On September 11, 1984, EPA determined that the facility was not required to comply with incineration regulations since the waste being incinerated was hazardous only by characteristic (EPA 1984b). The facility stopped using Industrial Boilers (SWMU 15) for burning D001 waste in August 1991.

On February 6, 1986, and August 2, 1990, National submitted revised Notification of Hazardous Waste Activity forms to EPA (National 1986a; 1990). The revised notifications indicated the facility as a generator and burner of hazardous wastes. National also submitted a revised Part A permit application on June 30, 1989 (National 1989b). The revised Part A permit application obtained from the EPA files did not have all the pages, and PRC could not identify the modifications.

On May 6, 1988, IEPA requested that National submit either a Part B permit application or a closure plan for the container (S01) and tank (S02) storage areas (SWMUs 1 and 3) (IEPA 1988d). National submitted a closure plan dated May 1989 to IEPA. Along with the closure plan, National submitted certification that no hazardous wastes were managed in the surface impoundment (S03) (SWMU 11)

and waste pile (T02) units (National 1989a). On July 2, 1991, IEPA approved the closure plan after several revisions and amendments. In the closure plan approval letter, IEPA required that National complete closure activities by February 1, 1992, and submit closure certification by April 1, 1992. The closure plan approval letter also included soil cleanup objectives and requested a brief description of future use of surface impoundment (S03) and waste pile (T02), and information demonstrating that the incinerator (listed as T03 on the Part A permit application) met the regulatory exemption (IEPA 1991a). National submitted a report, dated August 20, 1992, to IEPA demonstrating that the Industrial Boilers (SWMU 15) were exempt from regulations (National 1992c). Also, National indicated that the surface impoundment (S03), SWMU 11, would not be used in the future. Closure activities for the S01 and S02 units (SWMUs 1 and 3) are underway. The facility currently operates as a large-quantity generator storing hazardous wastes for less than 90 days (IEPA 1993b).

In the past, IEPA cited the facility for apparent violations during RCRA compliance inspections. These violations pertained to inadequacies in the waste analysis plan, contingency plan, management of hazardous wastes (concerning labeling and inspection schedules), personnel training records, and closure plan (IEPA 1984c, 1985b, 1987b, 1990a, 1991b). On September 16, 1987, and May 25, 1989, IEPA conducted a RCRA land disposal restriction (LDR) inspection at the facility and noted the following violations: failure to identify F-coded solvents as hazardous wastes; failure to determine the appropriate treatability group of the waste and appropriate treatment standards; and failure to notify shipments of F-coded solvent wastes. Both IEPA and EPA subsequently notified the facility that it was in noncompliance with LDR requirements (IEPA 1987b, 1988a, 1990a; EPA 1988, 1989). On January 12, 1990, National submitted all pertinent information requested by IEPA and EPA, resolving the issue. On February 8, 1990, EPA informed the facility that it was in compliance with the LDR requirements (EPA 1990). In the most recent RCRA compliance inspection conducted on September 8, 1993, IEPA found deficiencies concerning waste management and determination, hazardous waste manifests, contingency plan, and waste analysis plan (IEPA 1993b). These deficiencies have not been addressed to date.

The facility has 35 operating air permits covering emissions from batch chemical process systems, raw material and product storage tanks, and process heating boilers. Seven of the 35 air permits have expired, and the facility intends to renew these permits (National 1993). IEPA observed no air permit violations during past inspections (IEPA, 1982, 1983a, 1984d, 1986, 1988b, 1989b, 1990b, 1991c).

The facility has no history of odor complaints from area residents. The facility also has 3 special permits (Permits 931566, 800706, and 800967) for disposal of waste cylindrical filter cartridges, solidified waste resin and solid adhesive waste.

The facility is required to have a NPDES permit (IL0000621) for combined discharge of pretreated effluent and noncontact cooling water to the Illinois River through outfall 001 (IEPA 1993b). Before early 1985, the facility treated and discharged domestic sewage through outfall 001. Since then, the facility has used septic tanks for domestic sewage. Violations of NPDES permit effluent limits for pH, suspended solids, and fecal coliform were noted during several inspections conducted before 1983. During an inspection on April 7, 1983, IEPA offered several recommendations for improving effluent quality from pretreatment operations and preventing flooding of grit basins, Chemical Sludge Lagoons (SWMU 12), and the parshall flume (used to measure the combined discharge rate) (IEPA 1983c). Subsequently, National modified the On-Site Wastewater Pretreatment Plant (SWMU 6), and Chemical Sludge Lagoons (SWMU 12), and eliminated domestic sewage discharge to the outfall 001. No permit violations have been documented since 1983.

The facility has removed six on-site USTs. Two of them were used to store spent IPA, ethanol and water mixture, and the remaining to store fuel oil. Samples collected during the removal of two 15000-gallon spent IPA, ethanol, and water USTs showed IPA and ethanol concentrations below the detection limits. Contamination was observed during the removal of fuel oil USTs. The facility is currently monitoring the fuel oil USTs area by collecting groundwater samples from monitoring wells (see Section 4.0). IEPA has approved the removal of all USTs. No CERCLA activity has occurred at the facility.

2.6 ENVIRONMENTAL SETTING

This section describes the climate; flood plain and surface water; geology and soils; and groundwater in the vicinity of the facility.

2.6.1 Climate

The climate in Morgan County is continental, which is characterized by relatively cold winters and warm, humid summers. The average daily temperature is 52.6 °F. The lowest average daily temperature is 16.4 °F in January. The highest average daily temperature is 87.3 °F in July (USDA 1988).

The total annual precipitation for the county is 37.11 inches. Of this, about 23.78 inches, or 64 percent, usually falls from April through September (USDA 1988). The mean annual lake evaporation for the area is about 33 inches (USDC 1968). The 1-year, 24-hour maximum rainfall is about 4.53 inches. The average seasonal snowfall is about 20.1 inches (USDA 1988).

The prevailing wind is from the north-northwest. Average wind speed is highest in spring at 9 miles per hour (USDA 1988).

2.6.2 Flood Plain and Surface Water

The facility is located in a 100-year flood plain area (FEMA 1982). The facility discharges pretreated wastewater and noncontact cooling water to the Illinois River under an NPDES permit. Storm water runoff from the facility is generally discharged through storm water drains, which in turn discharge to the Illinois River.

The nearest surface water body, the Illinois River, is located within 1,000 feet west of the facility and is used for recreational, agricultural, industrial, and municipal purposes. Other surface water bodies in the vicinity of the facility include two unnamed settling ponds (1,000 feet north), Seamans Pond (0.25 mile south), and Chisel Lake (2 miles west). The purpose of the settling ponds is unknown. Seamans Pond and Chisel Lake are used for recreation.

2.6.3 Geology and Soils

The facility is underlain by an estimated 90 to 95 feet of unconsolidated sand and gravel, which overlies the Mississippian System bedrock. The unconsolidated sediments are of the Quaternary System and consist of glacial outwash deposits and deposits of alluvium within the flood plains of the Illinois River (Naymik and Barcelona 1981).

The facility is underlain by the Plainfield loamy sand and Urban land soils. Plainfield loamy sand soils are gently sloping (2 to 7 percent) and the surface layer typically consists of mixed dark brown and dark yellowish brown, loose loamy sand about 9 inches thick. The subsoil is dark yellowish brown, loose sand about 8 inches thick, and the underlying material to a depth of 60 inches is yellowish brown, loose sand. The available water capacity and organic matter content are low for these soils. The Urban land soils typically consist of disturbed and backfilled soils from construction and development activities. These soils underlie the facility building (USDA 1988).

2.6.4 Groundwater

The water table at the facility ranges from 20 to 26 feet below the ground surface. Since there is no overlying confining bed, the sand and gravel act as the water table aquifer. The aquifer is recharged from surface water infiltration. The facility uses this aquifer for process and cooling water in facility operations.

Groundwater flows in a natural gentle gradient west toward the Illinois River. This gradient is most likely similar to the site topography, which slopes 0.006 foot per foot toward the river. The sand and gravel aquifer transmissivities range from 150,000 to 300,000 gallons per day per foot (Naymik and Barcelona 1981). Hydraulic conductivities have been estimated at approximately 3,000 gallons per day per square foot, with an effective porosity of 10 percent (Naymik and Barcelona 1984). Boring logs for boreholes drilled at the facility indicate that the aquifer material consists of coarse sand with small gravel to a depth of 80 feet and finer sand with little or no gravel below 80 feet. Wells installed in this aquifer at a depth of 80 feet can produce up to 800 gallons per minute (Diehl 1965).

The facility is located in an agricultural and residential mixed-use area in Meredosia, Morgan County, Illinois. Meredosia has a population of about 1,300.

The facility is bordered on the north by a power plant; on the east by Route 1 and residential area; on the south by farm land; and on the west by the Illinois River. Access to the facility is controlled by fencing along the property boundary and by security guards. The nearest residential area is located within 1,000 feet from the eastern property boundary. The nearest school, Meredosia High School, is located about 2 miles northeast of the facility (USGS 1980).

The nearest surface water body, the Illinois River, is located within 1,000 feet west of the facility and is used for recreational, agricultural, industrial, and municipal purposes. Other surface water bodies in the vicinity of the facility include two unnamed settling ponds (1,000 feet north), Seamans Pond (0.25 mile south), and Chisel Lake (2 miles west). The purpose of the settling ponds is unknown. Seamans Pond and Chisel Lake are used for recreation. A surface water intake is located about 1 mile north upstream of the Illinois River. Apparently, surface water drawn from this intake serves the Meredosia community (USGS 1980).

Groundwater is used as an industrial, agricultural, and private water supply. Residential groundwater wells were identified within a 3-mile radius in both upgradient and downgradient directions.

Natural sensitive environments are not located on site; however, the flood plain map identifies the Chemical Sludge Lagoons (SWMU 12) as wetlands (artificial sensitive environments). The nearest natural sensitive environment, wetlands measuring 20 to 25 acres, is located about 3 to 4 miles south of the facility (USDI 1988).

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the 16 SWMUs identified during the PA/VSI. The following information is presented for each SWMU: description of the unit, dates of operation, wastes managed, release controls, history of documented releases, and PRC's observations. Figure 2 shows the SWMU locations.

SWMU 1

Waste Polyacrylic Solution Storage Tank

Unit Description:

This unit is located in building 46-C in the northeastern portion of the facility. The building measures approximately 40 feet by 70 feet and was constructed in 1972. This unit consists of a 10000-gallon, steel AST. An inlet and an outlet pipe at the tank's top and bottom, respectively, are connected to a pump that fills and evacuates the waste. This unit is used to store waste polyacrylic solution (F003, D001) that results from cleaning of reactors and from batch sampling and laboratory testing. Waste polyacrylic solution from cleaning of reactors is pumped directly to this unit; while solution from the batch sampling and laboratory testing is accumulated in the Satellite Accumulation Areas (SWMU 2) and pumped to this unit. This unit is listed as the tank storage area (S02) in the RCRA Part A permit application because it formerly stored hazardous waste for greater than 90 days.

Date of Startup:

This unit was installed in 1974.

Date of Closure:

This unit is active and is used to store hazardous waste for less than 90 days. National has submitted a closure plan for this unit that has been IEPA approved. Closure activities are underway and include collection and analyses of soil samples for volatile and semivolatile organic compounds.

Wastes Managed: This unit manages waste polyacrylic solution (F003, D001).

Release Controls: The AST is partially enclosed by concrete dikes. The AST and its ancillary equipment do not have adequate secondary containment. This unit is inspected daily to obtain waste inventory.

History of Documented Releases: No releases from this unit have been documented.

Observations: During the inspection, PRC observed several other ASTs adjacent to this unit that are used for raw material and product storage. This unit was intact and free of corrosion. The concrete floor in the vicinity of this unit was also intact and had no stains. PRC observed no evidence of releases (see Photograph No. 1).

SWMU 2 Satellite Accumulation Areas

Unit Description: Satellite accumulation areas are located throughout the facility. These include 20 waste polyacrylic solution (F003, D001), 3 nonhazardous special waste (waste cylindrical filter cartridges, solid adhesive waste, and solidified waste resin), and 2 used oil (nonhazardous) accumulation areas. All of these accumulation areas are located indoors on a concrete floor. Waste polyacrylic solution is accumulated in 5-gallon steel buckets and 55-gallon steel drums, while the special wastes and used oil are accumulated in 30-gallon cardboard drums and 55-gallon steel drums. Floor drains are located throughout the facility and in the vicinity of the accumulation areas. Waste polyacrylic solution accumulated in these accumulation areas is either transferred to the Waste Polyacrylic Solution Storage Tank (SWMU 1) or to the Red Label Room Drum Storage Area (SWMU 3). All of the special wastes are transferred to the Special Waste Storage Area

(SWMU 13), while used oil (nonhazardous) is transferred to the Used Oil Drum Storage Areas (SWMU 14).

Date of Startup: The dates these accumulation areas began operation is unknown; however, the facility began operation in 1956.

Date of Closure: These accumulation areas are active.

Wastes Managed: These accumulation areas manage waste polyacrylic solution (F003, D001), nonhazardous special wastes (waste cylindrical filter cartridges, solid adhesive waste, and solidified waste resin), and used oil (nonhazardous).

Release Controls: Floor drains located throughout the facility discharge via concrete trenches to the On-Site Wastewater Pretreatment Plant (SWMU 6).

History of Documented Releases: No releases from these accumulation areas have been documented.

Observations: During the inspection, PRC observed about 11 of the 20 waste polyacrylic solution accumulation areas and all of the special waste and used oil (nonhazardous) accumulation areas. All the waste polyacrylic solution accumulation drums were labeled, sealed, and free of leaks and corrosion. The special waste accumulation containers were open and unlabeled. The concrete surface in the vicinity of each accumulation area was intact and had no stains. PRC noted no evidence of release from these accumulation area (see Photographs No. 2 through 6).

SWMU 3**Red Label Room Drum Storage Area****Unit Description:**

This unit is located inside the red label room, which is located in the B-wing of the facility. The red label room measures about 40-feet wide and 60-feet long, and has a concrete surface and floor drains. The nearest floor drain is located within 5 feet of this unit. Waste polyacrylic solution (F003, D001) that cannot be pumped into the Waste Polyacrylic Solution Storage Tank (SWMU 1) because of its semisolid nature is stored in this unit in 55-gallon steel drums. This unit was listed as the container storage area (S01) in the RCRA Part A permit application because it was formerly used to store hazardous waste for greater than 90 days.

Date of Startup:

This unit began operation in 1965.

Date of Closure:

This unit is active and is used to store hazardous waste for less than 90 days. National has submitted a closure plan for this unit, which IEPA has approved. Closure activities are underway and include collection and analyses of soil samples for volatile and semivolatile organic compounds.

Wastes Managed:

This unit manages waste polyacrylic solution (F003, D001).

Release Controls:

PRC observed a floor drain within 5-feet of this unit that discharges to the On-Site Wastewater Pretreatment Plant (SWMU 6).

**History of
Documented Releases:**

No releases from this unit have been documented.

Observations:

During the inspection, PRC observed three 55-gallon drums containing waste polyacrylic solution (F003, D001) in this unit. Several other 55-gallon drums containing ignitable raw materials and products were

also stored in this room. All of the drums rested on wooden pallets and were sealed and labeled. The drums were free of leaks and corrosion. The concrete surface in the vicinity of this unit was free of cracks and stains. PRC observed no evidence of release (see Photograph No. 7).

SWMU 4

Spent Ethyl Acetate Distillation Units

Unit Description:

This SWMU is located indoors on a concrete floor and consists of three distillation units. This SWMU is located in a building measuring about 68 feet by 63 feet in the facility's A-wing. Spent ethyl acetate (F003, D001) stripped off of the product, decanted to remove some water, and collected in a surge tank and pumped to this unit. This unit is used to continuously reclaim spent ethyl acetate (F003, D001) generated during production and drying of PVA spheres that are used in hair spray manufacturing. The reclaimed ethyl acetate is reintroduced into the manufacturing processes, and the water fraction, consisting of industrial wastewater (nonhazardous), is discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6).

Date of Startup:

This unit began operation about 1980.

Date of Closure:

This unit is active.

Wastes Managed:

This unit manages spent ethyl acetate (F003, D001).

Release Controls:

This unit is located indoors on a concrete floor. Floor drains located in the vicinity of this unit discharge to SWMU 6.

History of Documented Releases:

No releases from this unit have been documented.

Observations: During the VSI, PRC observed this unit in operation. The concrete floor in the vicinity of this unit was intact and free of stains. PRC observed no sign of release (see Photograph No. 8).

SWMU 5 Solvent Storage Tank and Distillation-Extraction Columns

Unit Description: This unit is located inside and outside the solvent recovery building (building No. 53) which measures 26 feet by 63 feet and is located in the southern portion of the facility. This unit consists of a 12000-gallon AST and distillation-extraction columns. The AST is located outside the building, while the distillation-extraction columns are located inside. Both AST and distillation-extraction columns are located on a concrete surface, and the AST has secondary containment. Spent IPA, ethanol, and water (F003, D001) is stripped off of the product and collected in the AST. The solution is then passed through a distillation column to strip water from the solution. The water-stripped solution is then passed through the extraction column wherein water is introduced to separate IPA from the solution. The resulting IPA is reused in the manufacturing operations. The ethanol-water mixture from the distillation column is again passed through the extraction column to separate ethanol from the mixture. Similar to IPA, ethanol is also reused in the manufacturing operations. The water fraction, consisting of industrial wastewater (nonhazardous), from the distillation-extraction columns is discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6). National formerly stored spent IPA, ethanol, and water (F003, D001) in 2 15000-gallon USTs. These USTs were removed in February 1992, and the soil samples collected during removal showed no contamination.

Date of Startup: This unit began operation about 1980.

Date of Closure: This unit is active.

Wastes Managed: This unit manages spent IPA, ethanol, and water (D001).

Release Controls: The distillation and extraction columns are located indoors on a concrete surface, while the AST is located outdoors on a concrete surface. Since the secondary containment originally provided for this AST along with several other ASTs used to store reclaimed IPA and other products was inadequate, the facility uses a steel pit adjacent to the ASTs for additional containment. The steel pit was used to treat waste acidic solution; however, it has not been used for this purpose since 1980 and is now considered part of this unit. Floor drains in the vicinity of the distillation units discharge to the On-Site Wastewater Pretreatment Plant (SWMU 6).

History of Documented Releases: No releases from this unit have been documented.

Observations: During the VSI, PRC observed this unit in operation. The AST was intact and free of corrosion. The concrete surface in the vicinity of this unit had no cracks or stains. PRC noted no signs of release from this unit (see Photographs No. 9 and 10).

SWMU 6 On-Site Wastewater Pretreatment Plant

Unit Description: This unit is located in the western portion of the facility. It consists of floor drains and drainage trenches located throughout the facility; a waste caustic solution sump; grit settling basins; a surge basin; equalization basin; a primary clarifier; a secondary clarifiers; an aeration basin and aerobic digester; and, a rotary drum vacuum filter. The design average and maximum flows for this unit are 0.374 million

gallons per day (mgd) and 0.468 mgd, respectively. The design organic loading is about 2,450 pounds per day.

Industrial wastewater (nonhazardous) generated throughout the facility is discharged through a 15-inch drainage trench to the grit settling basins. The clay-lined grit settling basins measure about 120 feet wide by 220 feet long by 10 feet deep, with a slope of 2:1 and a volume of 660,000 gallons. Overflows from the grit settling basins is directed to the adjacent clay-lined surge basin. The surge basin measures about 70 feet wide by 400 feet long by 12 feet deep, with a slope of 2:1 and a volume of 1,900,000 gallons. Industrial wastewater from grit settling basins and surge basin is directed to the equalization basin and then to the primary clarifier. Lime and alum are added in the clarifier to enhance solids settling by precipitation and flocculation. Supernatant from the clarifier is discharged to the secondary clarifiers, for treatment through activated sludge process. Overflow from the secondary clarifiers is filtered in the vacuum drum rotary filter and discharged to the Illinois River through outfall 001 under a NPDES permit (IL0000621). The filter has an area of 300 square feet, with a drum diameter of 8 feet and length of 12 feet is sized to run about 225 gallons per minute. Underflow from the secondary clarifiers is discharged to the aeration basin and aerobic digester for sludge activation by nutrient addition (nitrogen or ammonia and phosphoric acid) and is redirected to the secondary clarifiers. Grit from the grit and surge basins, chemical sludge from the primary clarifier, and biological sludge from the aerobic digester are periodically removed and disposed of in the Chemical Sludge Lagoons (SWMU 12).

Date of Startup:

The grit and surge basins were installed about 1973 and 1985, respectively, while the rest of this unit was installed about 1970.

Date of Closure: This unit is active.

Wastes Managed: This unit manages all industrial wastewater (nonhazardous), including (1) wastewater from SWMUs 4 and 5; (2) wastewater from soaking waste cylindrical cartridges; (3) waste acidic solution; (4) emulsion wastewater; (5) waste caustic solution; (6) wastewater from raw material and waste storage drum cleaning operations; (7) wastewater from hair spray resin steam stripping operations; (8) wastewater from polyacrylic contaminated hose cleaning bin; (9) wastewater from cleaning floors throughout the facility, and (10) tank truck washings. This unit formerly managed DEC waste and wastewater containing ethylene amine. The facility discontinued generating DEC waste in 1993 and wastewater containing ethylene amine in 1980.

Release Controls: The grit and surge basins are clay-lined and flood-protected. The primary and secondary clarifiers are constructed of steel and concrete and have adequate secondary containment. The drainage trenches and sumps are constructed of concrete.

History of Documented Releases: No releases from this unit have been documented.

Observations: During the VSI, PRC observed all the industrial wastewater sources that discharge to this unit. The grit and surge basins were partly filled with industrial wastewater. This unit was observed to be operating normally. The facility periodically inspects all of this unit's components and takes necessary actions to prevent releases. PRC noted no sign of release from this unit (see Photographs No. 11 through 17).

SWMU 7**Neutralization Tanks****Unit Description:**

This unit consists of two open, in-ground neutralization tanks: one near the A-wing buildings and the other near the B-wing buildings. Both the tanks are constructed of steel and measure about 10 feet deep, 20 feet long, and 10 feet wide. The tank near the A-wing buildings has a capacity of about 15,000 gallons and the tank at the B-wing building has a capacity of about 10,000 gallons. These tanks are partly filled with limestone to facilitate neutralization of waste acidic solution (nonhazardous industrial wastewaters). After neutralization, the waste acidic solution is discharged through a 15-inch drain tile to the On-Site Wastewater Pretreatment Plant (SWMU 6). Chemical sludge (nonhazardous) from these tanks is periodically removed and transported in trucks to the Chemical Sludge Lagoons (SWMU 12).

Date of Startup:

The A-wing tank began operation in 1955, and the B-wing tank began operation in 1965.

Date of Closure:

This unit is active.

Wastes Managed:

This unit manages waste acidic solution (nonhazardous industrial wastewater).

Release Controls:

The tanks are constructed of steel and are open at the top. The tank's brim is slightly above the ground surface. The facility personnel inspect this unit during periodic removal of chemical sludge from this unit.

**History of
Documented Releases:**

No releases from this unit have been documented.

Observations: During the inspection, PRC observed that both neutralization tanks were intact and free of stains; however, the bottom of the tanks could not be inspected because they were covered with limestone and waste acidic solution. PRC noted no sign of release from this unit (see Photographs No. 18 and 19).

SWMU 8

Emulsion Wastewater Sumps

Unit Description: This unit consists of two concrete, flow-through sumps near the B-wing buildings. Emulsion wastewater generated during manufacturing of water-based emulsion polymer manufacturing operations is discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6) through this unit. This unit receives about 300 gallons per minute of emulsion wastewater.

Date of Startup: This unit began operation about 1980.

Date of Closure: This unit is active.

Wastes Managed: This unit manages emulsion wastewater (nonhazardous industrial wastewater).

Release Controls: Both sumps are constructed of concrete and are connected to the On-Site Wastewater Pretreatment Plant (SWMU 6) through drainage trenches. Overflow from these sumps is discharged to SWMU 6. In addition, facility personnel periodically inspect this unit.

History of Documented Releases: No releases from this unit have been documented.

Observations: During the VSI, PRC observed one sump sharing a common side wall with the noncontact cooling water outfall (outfall 001C). The tip of

the steel pipe that discharges emulsion wastewater to the sump was located on the steel grates over the sump. The pipe may become dislocated and discharge into outfall 001C. PRC observed no sign of release from this unit (see Photographs No. 20 and 21).

SWMU 9

Hair Spray Resin Sump

Unit Description:

This unit is adjacent to the B-wing Neutralization Tank (SWMU 7). This unit is open, located below ground, and constructed of concrete. It measures about 10 feet deep, 12 feet long, and 6 feet wide. Industrial wastewater (nonhazardous) from stream stripping during hair spray resin manufacturing operations is discharged to this unit for solids settling. Overflow from this unit flows by gravity to the On-Site Wastewater Pretreatment Plant (SWMU 6). The settled solids, consisting of nonhazardous chemical sludge, is mechanically removed and transported in trucks to the Chemical Sludge Lagoons (SWMU 12) for disposal.

Date of Startup:

This unit began operation in 1986.

Date of Closure:

This unit is active.

Wastes Managed:

This unit manages industrial wastewater (nonhazardous).

Release Controls:

This unit is constructed of concrete and is open at the top. Facility personnel periodically inspect this unit.

History of Documented Releases:

No releases from this unit have been documented.

Observations:

During the VSI, PRC observed this unit partly filled with white hair spray resin wastewater (nonhazardous industrial wastewater). PRC

could not inspect the bottom and sides of the pit because they were covered with wastewater. However, the facility personnel inspect this unit during periodic removal of chemical sludge from this unit. PRC noted no evidence of release (see Photograph No. 22).

SWMU 10

Former DEC Waste Collection Sump

Unit Description:

This unit is a 2000-gallon concrete sump, located in the DEC building that was used to collect spills during the production of DEC. The facility stopped manufacturing DEC in June 1993 and consequently ceased generating DEC waste. This unit was used to accumulate DEC waste and discharge it to the On-Site Wastewater Pretreatment Plant (SWMU 6).

Date of Startup:

This unit began operation in 1965.

Date of Closure:

This unit has been inactive since June 1993.

Wastes Managed:

This unit managed DEC waste (nonhazardous industrial wastewater).

Release Controls:

This unit is constructed of concrete, and it discharged to SWMU 6. Facility personnel periodically inspected this unit during its operation.

History of Documented Releases:

No releases from this unit have been documented.

Observations:

During the VSI, PRC did not visit this unit because the building was locked. However, facility representatives indicated that the sump is empty and clean.

SWMU 11**Former Rubber-Lined Pond****Unit Description:**

This unit is located in the western portion of the facility. It is rubber lined and has a design capacity of 560,000 gallons. Until 1985, the facility used this unit to neutralize wastewater containing ethylene amine before it was discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6). The facility listed this unit as T02 storage (surface impoundment) in its 1980 RCRA Part A permit application because it assumed that the wastewater was hazardous (P054). However, the facility later determined that the waste was not hazardous.

Date of Startup:

This unit began operation in the late 1970s.

Date of Closure:

This unit has been inactive since 1985.

Wastes Managed:

This unit managed wastewater containing ethylene amine (nonhazardous industrial wastewater). The facility stopped using ethylene amine in 1980, and the wastewater treated in this unit after 1980 did not contain ethylene amine; however, it was considered to be nonhazardous.

Release Controls:

This unit is rubber-lined and surrounded with a 3-foot-high earthen dike.

**History of
Documented Releases:**

No releases from this unit have been documented.

Observations:

During the VSI, PRC observed that this unit contained no wastes and was cleaned and open. Soil samples collected around this unit have not contained any contamination. PRC noted no signs of release from this unit. This unit was not photographed.

SWMU 12**Chemical Sludge Lagoons****Unit Description:**

This unit consists of four clay-lined lagoons in the northern portion of the facility. These lagoons are identified as primary sludge lagoon (PSL) No. 1, 2, and 3, and the secondary sludge lagoon (SSL). PSL No. 1 and the SSL were later combined and identified as PSL No. 1. PSL No. 1 measures about 300 feet wide, 500 feet long, and 6 feet deep, with a slope of 2:1 and a volume of 6.7 million gallons. PSL No. 2 measures about 275 feet wide, 400 feet long, and 16 feet deep, with a volume of 10 million gallons, and PSL No. 3 measures about 400 feet wide by 400 feet long by 16 feet deep, with a volume of 20 million gallons. All the sludge lagoons are flood-protected.

Date of Startup:

PSLs No. 1, 2, and 3 began operation about 1973, 1975, and 1985, respectively.

Date of Closure:

PSLs No. 1 and 2 were inactive and filled with grit, and chemical and biological sludge; and PSL No. 3 was active.

Wastes Managed:

This unit manages chemical sludge (nonhazardous) from the Neutralization Tanks (SWMU 7) and the Hair Spray Resin Sump (SWMU 9), and grit, chemical, and biological sludge (all nonhazardous) from the On-Site Wastewater Pretreatment Plant (SWMU 6).

Release Controls:

All the lagoons are clay-lined and flood-protected with elevated berms. National installed monitoring wells upgradient and downgradient of this unit, and collects groundwater samples on a quarterly basis for pH, chemical oxygen demand, and total suspended and dissolved solids.

**History of
Documented Releases:**

No releases from this unit have been documented.

Observations:

During the VSI, PRC observed each lagoon. PSLs No. 1 and 2 were inactive and filled with grit, and chemical and biological sludge. PSL No. 3 was being used for disposal of grit and sludge from SWMUs 6, 7, and 9. PRC noted no sign of release from this unit (see Photograph No. 23).

SWMU 13

Special Waste Storage Area

Unit Description:

This unit is located outdoors in the loading dock area and consists of 10- to 15-cubic-yard roll-off boxes on an asphalt surface. Special wastes accumulated in the Satellite Accumulation Areas (SWMU 2) are transferred to and stored in this unit before they are transported off site. Storm drains were located in the vicinity of this unit.

Date of Startup:

This unit began operation about 1980.

Date of Closure:

This unit is active.

Wastes Managed:

This unit manages special wastes, such as waste cylindrical filter cartridges (nonhazardous), solid adhesive waste (nonhazardous), and solidified resin waste (nonhazardous).

Release Controls:

This unit has no release controls.

**History of
Documented Releases:**

No releases from this unit have been documented.

Observations:

During the VSI, PRC observed three roll-off boxes in this unit. All were intact and free of corrosion. PRC noted no signs of release from this unit. This unit was not photographed.

SWMU 14**Used Oil Drum Storage Areas**

Unit Description: This unit consists of two storage areas, one inside building No. 4 and one outside near the empty drum storage area. The storage area inside the building is located on concrete floor, while the one outside is located on a gravel surface. Used oil (nonhazardous) accumulated in several satellite accumulation units in the maintenance areas is transferred and stored in 55-gallon drums in this unit.

Date of Startup: This unit began operation in about 1980.

Date of Closure: This unit is active.

Wastes Managed: This unit manages used oil (nonhazardous).

Release Controls: The 55-gallon drums containing used oil are stored on wooden pallets at both locations; however the storage area located inside the building has concrete floor, while the one outside has gravel surface. No other release controls are provided for this unit.

History of Documented Releases: No releases from this unit have been documented.

Observations: During the VSI, PRC observed both storage areas. The storage area located outdoors contained 11 partly full to full drums labeled "used oil," and the one inside contained 4 full drums. Facility personnel could not positively identify the wastes stored in outdoor storage area. Apparently, these drums contained used oil (nonhazardous). PRC observed no evidence of release from this unit (see Photograph No. 24).

SWMU 15**Industrial Boilers****Unit Description:**

This unit consists of two Cleaver Brooks steam generating boilers that partially comprise the facility's power resources. It is located indoors on a concrete floor. This unit was originally listed as incinerator (T03) in the RCRA Part A permit application; however, EPA reviewed the boiler information and informed National that this unit is not subject to RCRA regulations. Until August 1991, this unit was used to burn ethanol-water (D001) mixture from SWMU 4. Permission to burn ethanol-water (D001) mixture was granted by IEPA in June 1980 and September 1981. This unit is permitted by the IEPA as a fuel combustion emission source. Reportedly, the thermal efficiency of this unit is about 71 percent, and well above the IEPA's thermal efficiency criterion of 60 percent.

Date of Startup:

This unit began operation in about 1980.

Date of Closure:

This unit has been inactive since August 1991.

Wastes Managed:

This unit managed ethanol-water mixture (D001) from Solvent Storage Tank and Distillation-Extraction Columns (SWMU 5).

Release Controls:

This unit is located indoors on a concrete floor. The facility has air permits for emissions from this unit.

**History of
Documented Releases:**

No releases from this unit have been documented.

Observations:

During the VSI, PRC observed both the boilers in operation. According to the facility representatives, there have been no operating permit violations related to this unit. PRC noted no evidence of release from this unit. This unit was not photographed.

SWMU 16**Open Burning Area****Unit Description:**

This unit measured about 30 feet by 100 feet, and it was located in the southwestern portion of the facility. This unit was used for open burning of wastes generated at the facility. The wastes burned in this unit reportedly contained small amounts of hazardous constituents, but the wastes as such were nonhazardous. Liquid material was allowed to drain before burning; however, the solid materials were directly burned. There are no records of specific wastes or products burned, and their volumes. National ceased open burning when the state stopped permitting this practice (National 1986b).

Date of Startup:

This unit began operation in 1968.

Date of Closure:

This unit is inactive since 1971.

Wastes Managed:

The specific wastes this unit managed are unknown; however, the waste paper filters and unusable final products are among the wastes managed in this unit.

Release Controls:

There were no release controls for this unit.

**History of
Documented Releases:**

No releases from this unit have been documented.

Observations:

The exact location of this unit is unknown. PRC did not observe this unit.

4.0 AREAS OF CONCERN

PRC identified two AOCs during the PA/VSI. These AOCs are discussed below; their locations are shown in Figure 2.

AOC 1 Acrylic Acid Spill Area

On January 2, 1991, National discovered a release of about 94,000 pounds of acrylic acid. The release, which had started on December 17, 1990, was apparently caused by a slow leak from a pump flange near the bulk storage AST. Approximately 150 to 200 cubic yards of contaminated soil immediately below the source of the spill was excavated from an area measuring about 15 feet by 30 feet by 10 feet. The excavation was limited to this area due to potential undermining of overlying pipe rack structural support piers and the neighboring dike around the AST. Soil samples collected from the bottom of the excavation contained acrylic acid in concentrations of 30,000 parts per million (ppm) (National 1992d; IEPA 1992a).

National submitted a "Proposed Bioremediation Work Plan" dated January 29, 1991. The work plan proposed four groundwater monitoring wells, one upgradient of the spill and three downgradient. On February 6, 1991, National entered into the VCP with IEPA, and subsequently IEPA required the following cleanup objectives: 0.56 milligram per liter (mg/L) in groundwater, and 0.56 milligram per kilogram (mg/kg) in soils. On June 26, 1991, IEPA sent a letter to National commenting on the work plan approach and monitoring well construction, IEPA also requested a health and safety plan (HSP) and quality assurance project plan (QAPjP) (IEPA 1992a).

On August 15, 1991, National submitted a hydrogeologic report, HSP, and QAPjP to IEPA. The report also documented installation of four groundwater monitoring wells. On November 7, 1991, IEPA sent a letter with comments on the HSP and QAPjP. IEPA made no comments on the hydrogeologic report (IEPA 1992a).

On December 6, 1991, National submitted groundwater sampling results to IEPA. Based on the sampling results, National concluded that the spill area has been remediated. However, IEPA did not approve the groundwater data because the samples were not collected and analyzed by accepted quality control methods. IEPA also found no documentation that soil cleanup levels had been achieved. In a letter dated February 10, 1992, National indicated that remediation had been completed and that it would begin monitoring groundwater monthly from February 1992 (IEPA 1992a).

According to the files reviewed, National never addressed IEPA's comments on the HSP and QAPjP. IEPA did not approve the groundwater sampling results and subsequently determined that the facility did not adequately demonstrate that cleanup objectives were met.

In response to additional information requested by PRC, National indicated that the facility recently collected groundwater as part of final closure and remediation.

AOC 2

UST Areas

Between 1962 and 1969, the facility used a 15000-gallon UST to store a flammable solvent awaiting sale. The specific location of this UST is unknown. National reportedly cleaned this UST with water and backfilled it with sand. The UST is still in place. No soil sampling was conducted to confirm that no releases had occurred from the UST (National 1986b).

Between December 1991 and February 1992, the facility removed four 15000-gallon fuel oil USTs located near the railroad siding. Apparently, these USTs were adjacent to several underground firewater, process water, gas, potable water, sewage, and soft water lines. All of these lines, with the exception of the gas line, ruptured during removal operations. Water from these lines went into the USTs and overflowed into the sandy soils in the vicinity. The facility estimated a 100-gallon spill of all the above materials with the exception of gas. After fixing the ruptured lines, the facility

backfilled the area with excavated and clean soils. In lieu of remediating the spill area, the facility requested that IEPA allow monthly sampling and analysis in this area for a year to confirm releases to soils and groundwater (National 1992b). Apparently, IEPA concurred with National regarding the proposed monitoring activities.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified 16 SWMUs and 2 AOCs at the National facility. Background information on the facility's location; operations; waste generating processes and waste management practices; history of documented releases; regulatory history; environmental setting; and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, history of documented releases, and observed condition, is presented in Section 3.0. AOCs are discussed in Section 4.0. Following are PRC's conclusions and recommendations for each SWMU and AOC. Table 3, located at the end of this section, summarizes the SWMUs and AOCs at the facility and the recommended further actions.

SWMU 1 Waste Polyacrylic Solution Storage Tank

Conclusions: This unit is located indoors on a concrete surface. It formerly stored waste polyacrylic solution (F003, D001) for greater than 90 days and is currently undergoing RCRA closure. This unit does not have adequate secondary containment. No releases have been documented or observed from this unit. The concrete surface in the vicinity of this unit was intact and free of stains. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends that National provide adequate secondary containment for the AST and its ancillary equipment.

SWMU 2 Satellite Accumulation Areas

Conclusions: These units consist of 5-gallon steel buckets or 55-gallon steel drums used to accumulate waste polyacrylic solution (F003, D001), nonhazardous special wastes, and nonhazardous used oil. All of the units are located indoors on a concrete surface. The concrete surface in the vicinity of these drums was intact and free of stains. No releases have been documented or observed from

this unit. The potential for releases from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 3 Red Label Room Drum Storage Area

Conclusions: This unit is located indoors on a concrete surface. It was formerly used to store waste polyacrylic solution (F003, D001) for greater than 90 days, and is undergoing RCRA closure. Waste polyacrylic solution is stored in 55-gallon drums in this unit for less than 90 days. No releases from this unit have been documented or observed. The concrete surface in the vicinity of this unit was intact and free of stains. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 4 Spent Ethyl Acetate Distillation Units

Conclusions: This unit is located indoors on a concrete surface. It continuously reclaims spent ethyl acetate (F003, D001); therefore, this waste is not stored in drums. No releases from this unit have been documented or observed. The concrete surface in the vicinity of this unit was intact and free of stains. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 5 Solvent Storage Tank and Distillation-Extraction Columns

Conclusions: Both the AST and the distillation-extraction columns are located on a concrete surface, and the AST has secondary containment. The AST was intact and

free of corrosion, and the concrete surface in the vicinity of this unit was also intact and free of stains. No releases from this unit have been documented or observed from this unit. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 6 On-Site Wastewater Pretreatment Plant

Conclusions: This unit manages nonhazardous industrial wastewaters generated throughout the facility. All components of this unit are either clay-lined or have adequate secondary containment. The facility periodically inspects all of this unit's components, and takes necessary actions to prevent releases. No releases from this unit have been documented or observed. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 7 Neutralization Tanks

Conclusions: Neutralization tanks are located outdoors and are constructed of concrete. They manage waste acidic solution (nonhazardous industrial wastewater) generated during cleanup of polymerization reactors. PRC could not inspect the bottoms of these tanks because they were covered with waste acidic solution. However, the facility personnel inspect this unit during periodic removal of chemical sludge from this unit. No releases have been documented or observed from this unit. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 8

Emulsion Wastewater Sumps

Conclusions:

This unit is used to manage emulsion wastewater (nonhazardous industrial wastewater). One of the sumps is adjacent to outfall 001C, used for noncontact cooling water. If dislocated, the steel pipe that discharges emulsion wastewater to this sump might release emulsion wastewater to the outfall. No releases from this unit have been observed or documented. The potential for release from this unit to groundwater, air, or on-site soils is low; and to surface water is moderate.

Recommendations:

PRC recommends that National secure the steel pipe that discharges to the sump such that it is not accidentally dislocated.

SWMU 9

Hair Spray Resin Sump

Conclusions:

This unit is located outdoors and is constructed of concrete. It manages nonhazardous industrial wastewater generated during hair spray manufacturing processes. PRC could not inspect the bottom and sides of the pit because they were covered with industrial wastewater (nonhazardous). However, the facility personnel inspect this unit during periodic removal of chemical sludge from this unit. No releases from this unit have been documented or observed. The potential for release from this unit to groundwater, surface water, air or on-site soils is low.

Recommendations:

PRC recommends no further action at this time.

SWMU 10

Former DEC Waste Collection Sump

Conclusions:

This unit is located indoors and is constructed of concrete. It was used to collect DEC waste until June 1993. PRC did not inspect this unit since the building in which it was located was locked during the inspection. However, the facility representatives indicated that this unit contains no waste and is

clean. No releases from this unit have been documented. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 11 Former Rubber-Lined Pond

Conclusions: This unit is rubber-lined and was used to neutralize nonhazardous industrial wastewater. This unit has been inactive since 1985. Soil sampling in the vicinity of this unit did not show any contamination. No releases from this unit have been documented or observed. The facility does not intend to use this unit to manage any waste in the future. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 12 Chemical Sludge Lagoons

Conclusions: This unit consists of two inactive lagoons and one active lagoon. All lagoons are clay-lined and flood-protected, and manage nonhazardous grit and sludge from SWMUs 6, 7, and 9. National collects quarterly groundwater samples from monitoring wells located upgradient and downgradient of this unit for pH, chemical oxygen demand, and total suspended and dissolved solids. No releases from this unit have been observed or documented. According to the facility representative, the adhesive material in the disposed wastes settles at the bottom and acts as additional liner for this unit. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 13

Special Waste Storage Area

Conclusions: This unit is located outdoors on an asphalt surface and manages nonhazardous special wastes. The asphalt surface in the vicinity of this unit was intact and free of stains. No releases from this unit have been documented or observed. The potential for release from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 14

Used Oil Drum Storage Areas

Conclusions: This unit manages nonhazardous used oil. The storage area inside the building is located on concrete floor, while the one outside is located on a gravel surface. No other release controls are provided for this unit. Facility personnel could not positively identify the wastes stored in outdoor storage area. The potential for release from this unit (outside storage area) to on-site soils is moderate, and to groundwater, surface water, or air is low.

Recommendations: PRC recommends that National either move the outside storage area indoors or install a concrete surface beneath this unit to prevent any releases to on-site soils.

SWMU 15

Industrial Boilers

Conclusions: This unit is inactive since August 1991, and it formerly managed ethanol-water mixture (D001). This unit is operated under a permit issued by IEPA. The facility monitors air emissions from this unit. No releases from this unit have been observed or documented. The potential for releases from this unit to groundwater, surface water, air, or on-site soils is low.

Recommendations: PRC recommends no further action at this unit.

SWMU 16

Open Burning Area

Conclusions: National has no records of specific wastes or products burned in this area or their volumes. However, the material burned reportedly contained small amounts of hazardous constituents. National ceased open burning when the state stopped permitting this practice (National 1986b). Based on the available information, the potential for release to on-site soils is moderate; and to groundwater, surface water, and air is low.

Recommendations: PRC recommends that National conduct soil sampling in the Open Burning Area and analyze the samples for volatile and semivolatile organic compounds and metals. National should then followup with groundwater sampling if contamination is detected.

AOC 1

Acrylic Acid Spill Area

Conclusions: On February 6, 1991, National entered into the VCP with IEPA, and installed groundwater monitoring wells. Based on the sampling results, National concluded that the spill area was remediated. However, IEPA did not approve the groundwater data since the samples were not collected and analyzed in accordance with the approved QAPjP; and IEPA also determined that the facility did not adequately demonstrate that cleanup objectives were met. The potential for release to groundwater and surface water is low because the heavily contaminated soils from the surface have already been excavated; and the potential for release to air is low because the material spilled is nonvolatile. Releases to on-site soils have been documented.

Recommendations: PRC recommends that National resample groundwater per IEPA requirements; attain the soil cleanup objectives specified by IEPA; and forward a cleanup report to EPA.

ENFORCEMENT
CONFIDENTIAL

AOC 2

UST Areas

Conclusions:

The 15000-gallon UST used between 1962 and 1969 to store flammable solvent was closed in place. However, the tank's integrity during its operation was not checked before closure and no soil sampling was conducted to confirm that no releases had occurred from the UST (National 1986b). Therefore, the potential for release to environmental media cannot be determined.

A spill to surrounding soils occurred during removal of 15000-gallon fuel oil USTs located near the railroad siding. In lieu of remediating the spill area, the facility requested that IEPA allow monthly sampling and analysis in this area for a year to confirm releases to soils and groundwater (National 1992b). Apparently, IEPA concurred with National regarding the proposed monitoring activities.

Recommendations:

PRC recommends that National conduct soil sampling downgradient of the 15000-gallon UST used for flammable solvents, and analyze the sample for volatile and semivolatile organic compounds to confirm whether release to soil has occurred. PRC also recommends that National forward the reports related to monitoring activities at the fuel oil USTs to EPA.

TABLE 3
SWMU AND AOC SUMMARY

	<u>SWMU</u>	<u>Dates of Operation</u>	<u>Evidence of Release</u>	<u>Recommended Further Action</u>
1.	Waste Polyacrylic Solution Storage Tank	1974 to present	None	Provide adequate secondary containment
2.	Satellite Accumulation Areas	1956 to present	None	None
3.	Red Label Room Drum Storage Area	1965 to present	None	None
4.	Spent Ethyl Acetate Distillation Units	1980 to present	None	None
5.	Solvent Storage Tank and Distillation- Extraction Columns	1980 to present	None	None
6.	On-Site Wastewater Pretreatment Plant	1970 to present	None	None
7.	Neutralization Tanks	1955 to present	None	None
8.	Emulsion Wastewater Sumps	1980 to present	None	Secure the steel pipe that discharges wastewater to this unit
9.	Hair Spray Resin Sump	1986 to present	None	None
10.	Former DEC Waste Collection Sump	1965 to June 1993	None	None
11.	Former Rubber- Lined Pond	Late 1970s to 1985	None	None
12.	Chemical Sludge Lagoons	1973 to present	None	None

TABLE 3 (Continued)
SWMU AND AOC SUMMARY

<u>SWMU</u>		<u>Dates of Operation</u>	<u>Evidence of Release</u>	<u>Recommended Further Action</u>
13.	Special Waste Storage Area	1980 to present	None	None
14.	Used Oil Drum Storage Area	1980 to present	None	Either move the outside storage area indoors or install a concrete surface beneath this unit
15.	Industrial Boilers	1980 to present	None	None
16.	Open Burning Area	1968 to 1971	None	Conduct soil sampling, followed by groundwater sampling if contamination is detected
<u>AOC</u>		<u>Dates of Operation</u>	<u>Evidence of Release</u>	<u>Recommended Further Action</u>
1.	Acrylic Acid Spill Area	1990 to present	Documented releases to on-site soils	Conduct remedial actions in accordance with IEPA requirements
2.	UST Areas	1962 to present	Documented release to on-site soils	Conduct soil sampling near flammable solvent UST, and forward a report on monitoring activities at fuel oil USTs

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APPENDIX A
VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS
(15 Pages)

VISUAL SITE INSPECTION SUMMARY

**National Starch and Chemical Company
South Washington Street
Meredosia, Illinois 62665
ILD 003 934 569**

Date: August 26, 1993

Primary Facility Representative: Mr. Doug Baur, Environmental Coordinator
Representative Telephone No.: (217) 584 1323
Additional Facility Representatives: Mr. Ray Dimuzio, Plant Manager
Mr. Reo Hiring

IEPA Representative: Mr. John Richardson

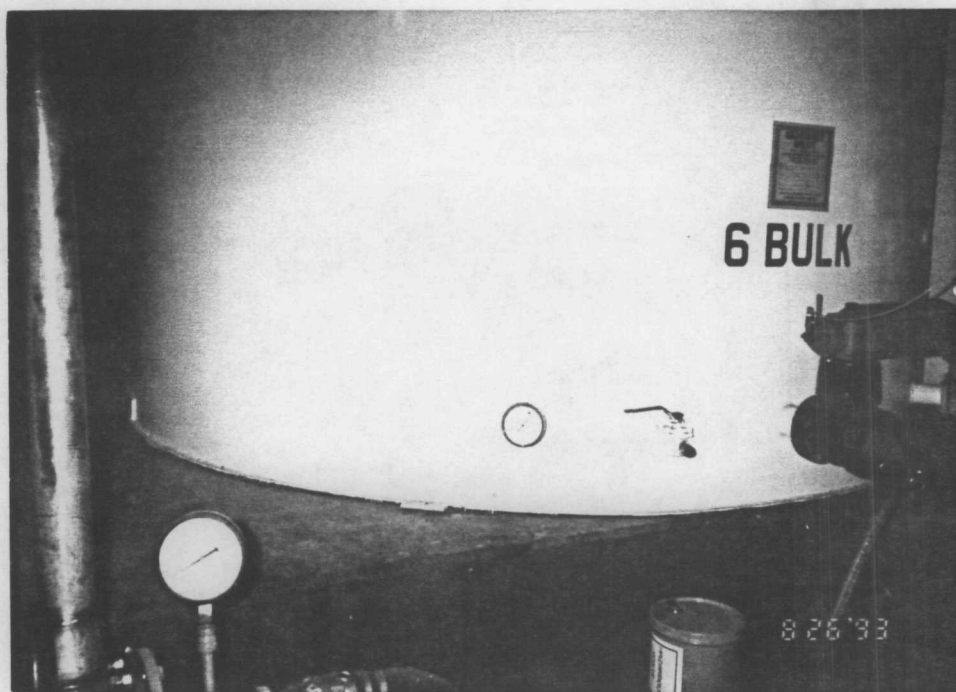
Inspection Team: Mr. Robert Melton, PRC
Mr. Seshu Kulkarni, PRC

Photographer: Mr. Robert Melton

Weather Conditions: Clear sky, around 75 °F

Summary of Activities: The visual site inspection (VSI) began at 8:00 a.m. with an introductory meeting. The inspection team explained the purpose of the VSI and the agenda for the visit. Facility representatives then discussed the facility's past and current operations, solid wastes generated, and release history. Facility representatives provided the inspection team with copies of requested documents.

The VSI tour began at 8:25 a.m., and concluded at 12:00 p.m., after which the inspection team held an exit meeting with facility representatives. The VSI was completed and the inspection team left the facility at 12:25 p.m.



Photograph No. 1

Orientation: Northwest

Location: SWMU 1

Date: 08/26/93

Description: This photograph shows the Waste Polyacrylic Solution Storage Tank.



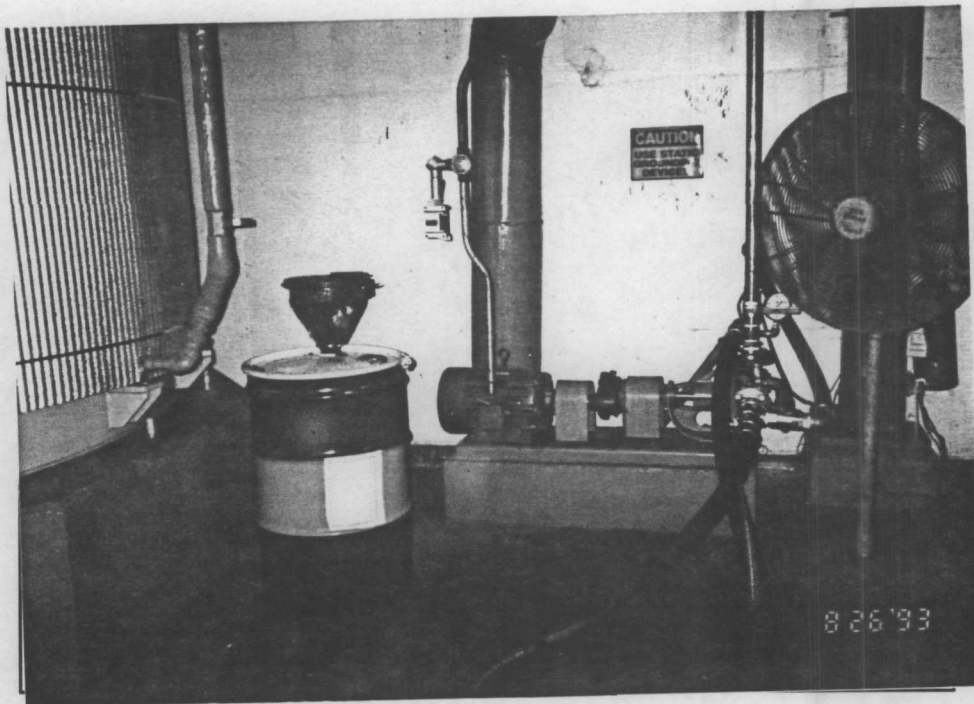
Photograph No. 2

Orientation: Northwest

Location: SWMU 2

Date: 08/26/93

Description: This photograph shows one of the waste polyacrylic solution (F003, D001) satellite accumulation units.



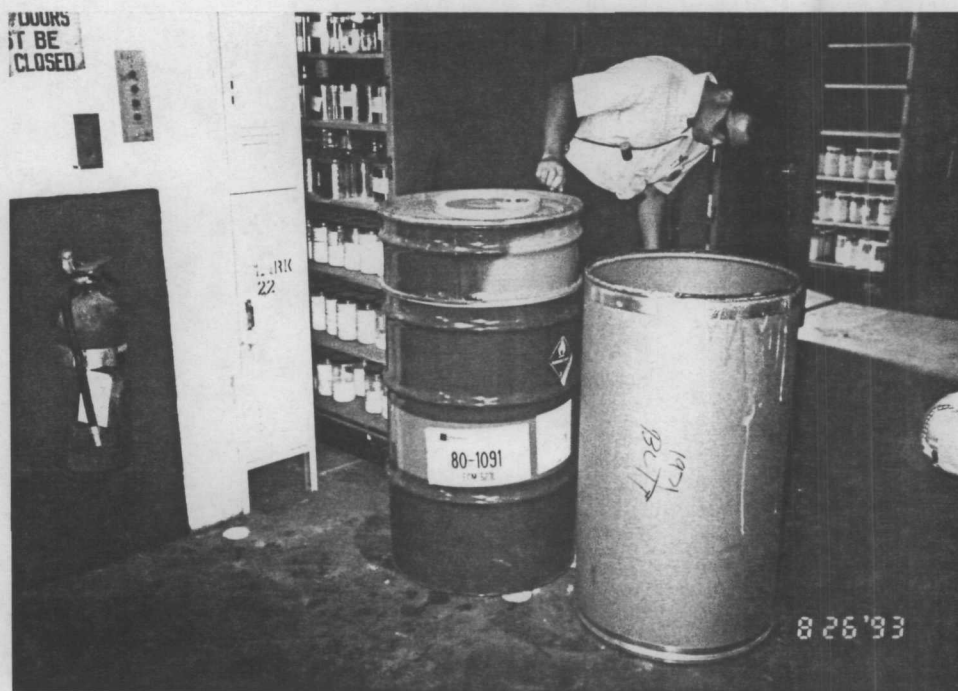
Photograph No. 3

Orientation: East

Location: SWMU 2

Date: 08/26/93

Description: This photograph shows a 55-gallon drum in the lacquer department used to accumulate waste polyacrylic solution (F003, D001).



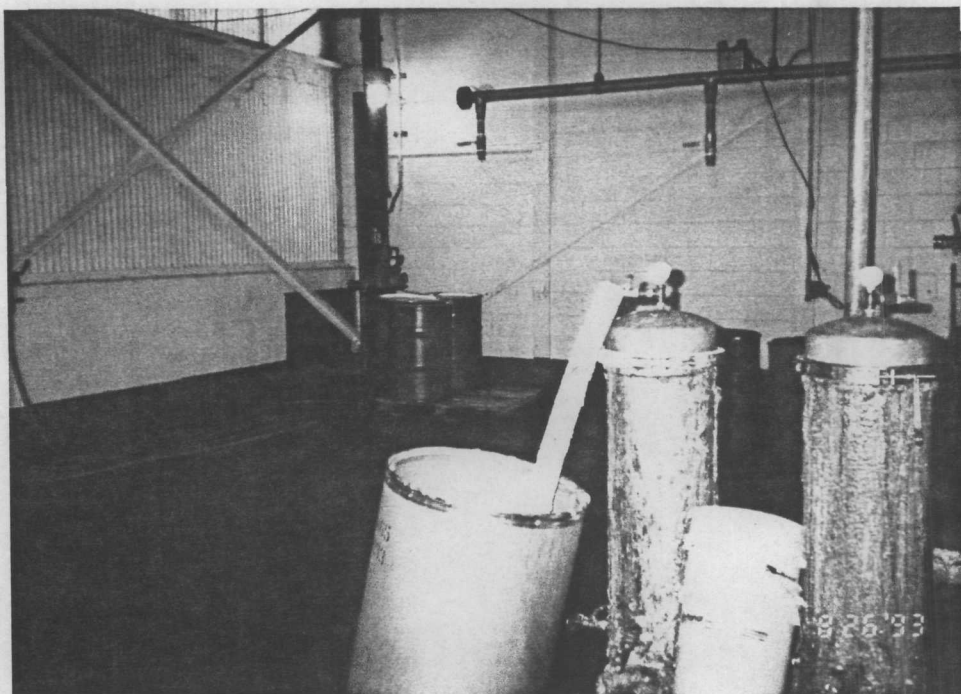
Photograph No. 4

Orientation: East

Location: SWMU 2

Date: 08/26/93

Description: This photograph shows a 55-gallon drum near laboratory area used to accumulate waste polyacrylic solution (F003, D001).



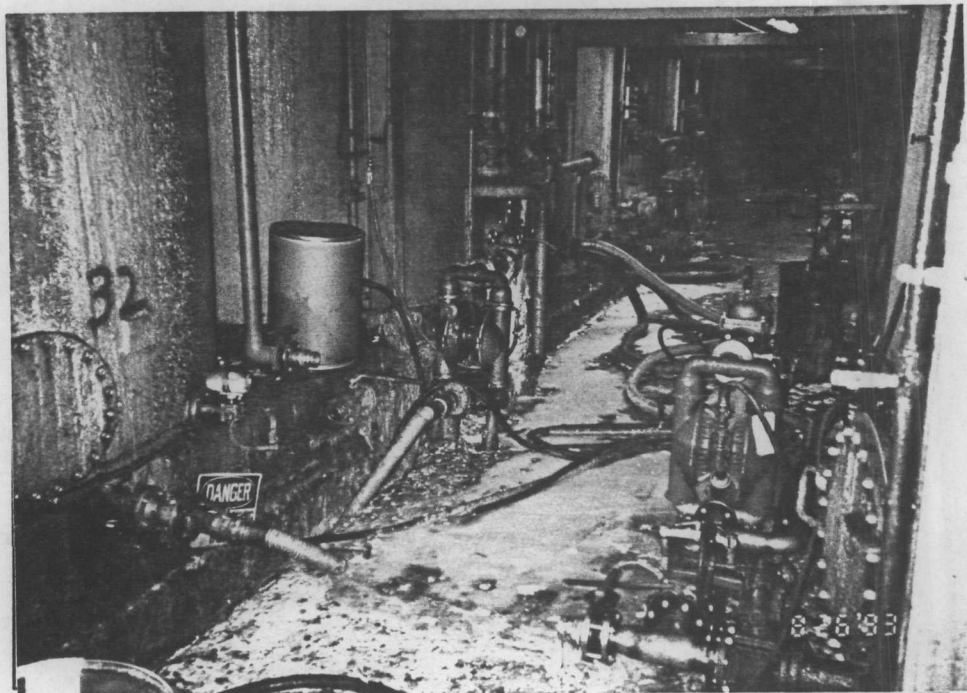
Photograph No. 5

Location: SWMU 2

Orientation: West

Date: 08/26/93

Description: This photograph shows a 30-gallon cardboard drum in the lacquer department used for waste cylindrical cartridge filters (nonhazardous).



Photograph No. 6

Location: SWMU 2

Orientation: Southwest

Date: 08/26/93

Description: This photograph shows solidified waste resin (nonhazardous) spilled on the floors while being pumped out from the storage tanks. The spilled material is either collected in drums and disposed of as special waste, or washed into the drainage trenches for treatment in the On-Site Wastewater Pretreatment Plant (SWMU 6).



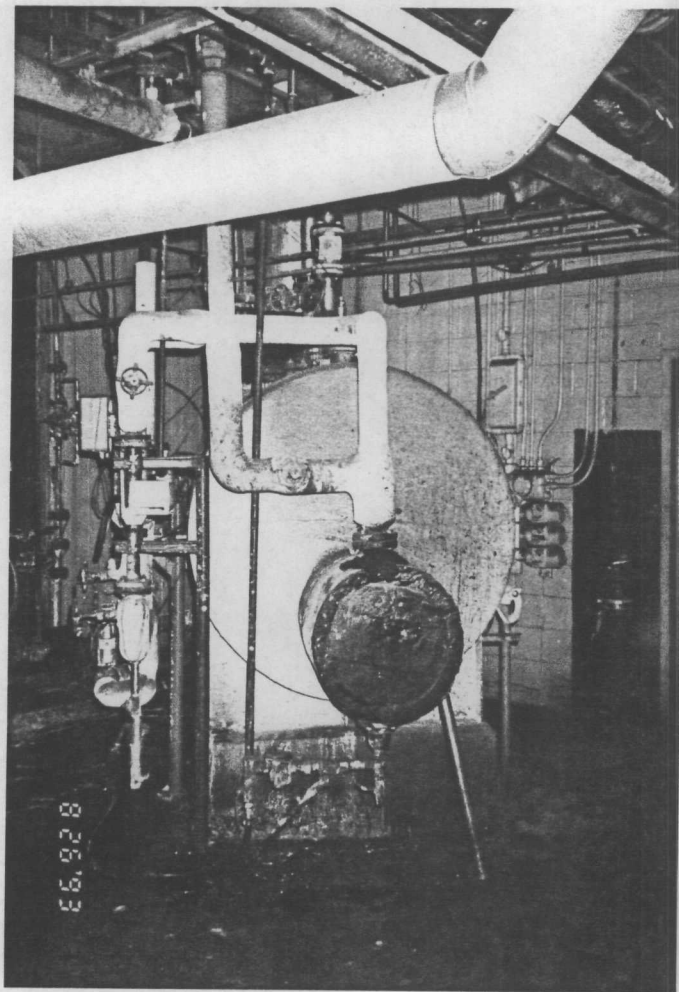
Photograph No. 7

Orientation: Southwest

Location: SWMU 3

Date: 08/26/93

Description: This photograph shows three 55-gallon drums of waste polyacrylic solution (F003, D001) in the Red Label Room Drum Storage Area. The black drums contain ignitable raw materials.



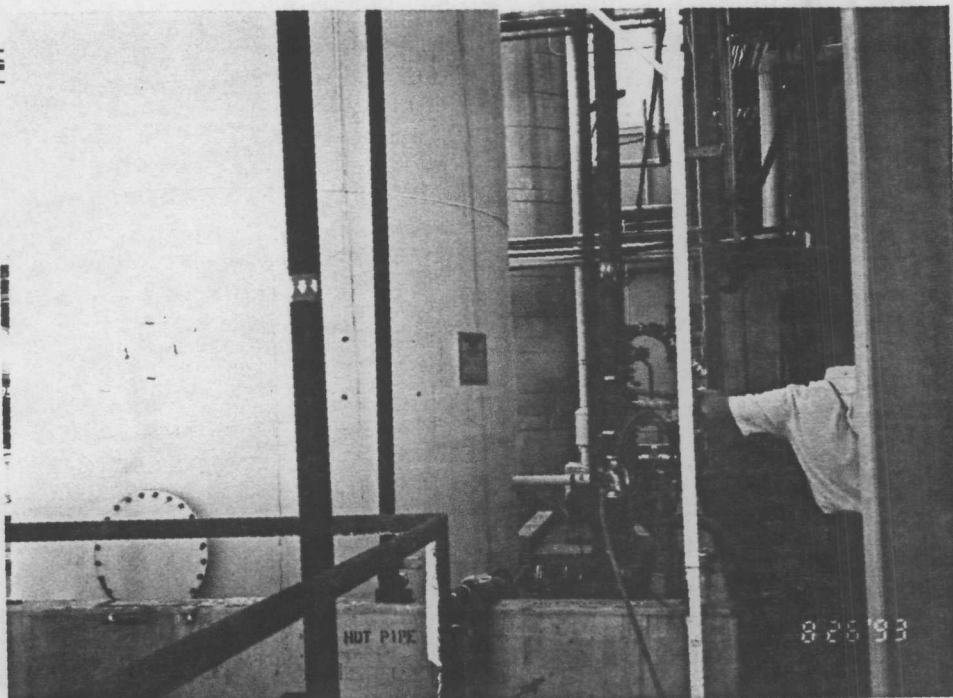
Photograph No. 8

Orientation: East

Description: This photograph shows one of the three Spent Ethyl Acetate Distillation Units.

Location: SWMU 4

Date: 08/26/93



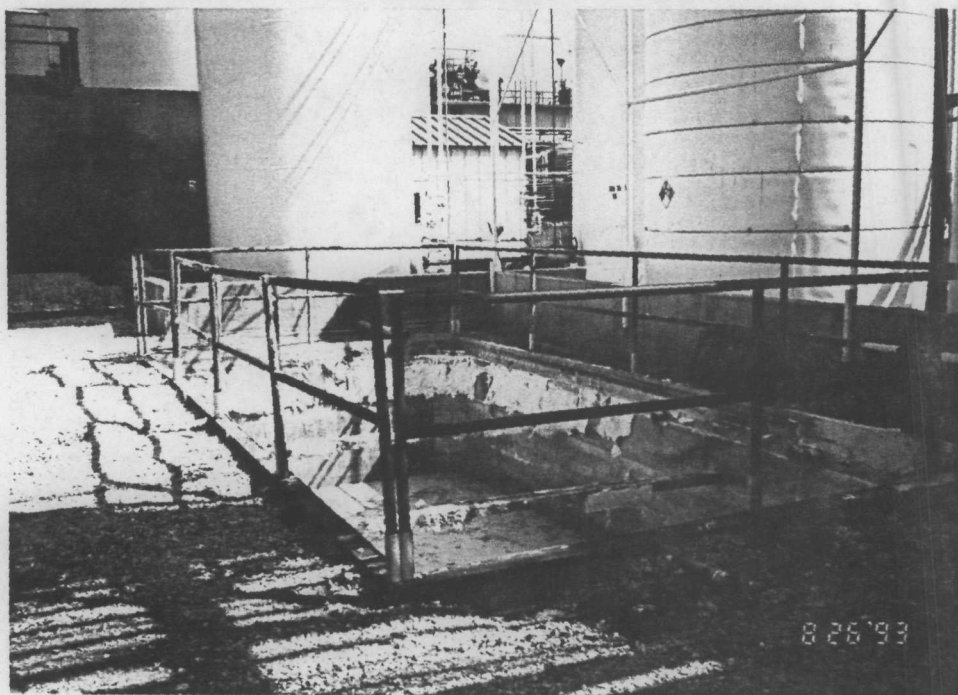
Photograph No. 9

Location: SWMU 5

Orientation: South

Date: 08/26/93

Description: This photograph shows the two aboveground storage tanks (AST) that are part of the Solvent Storage Tank and Distillation-Extraction Columns. The AST in front is used to store spent isopropyl alcohol (IPA), ethanol and water (D001), while the one in the background is used to store the reclaimed IPA/ethanol mixture.



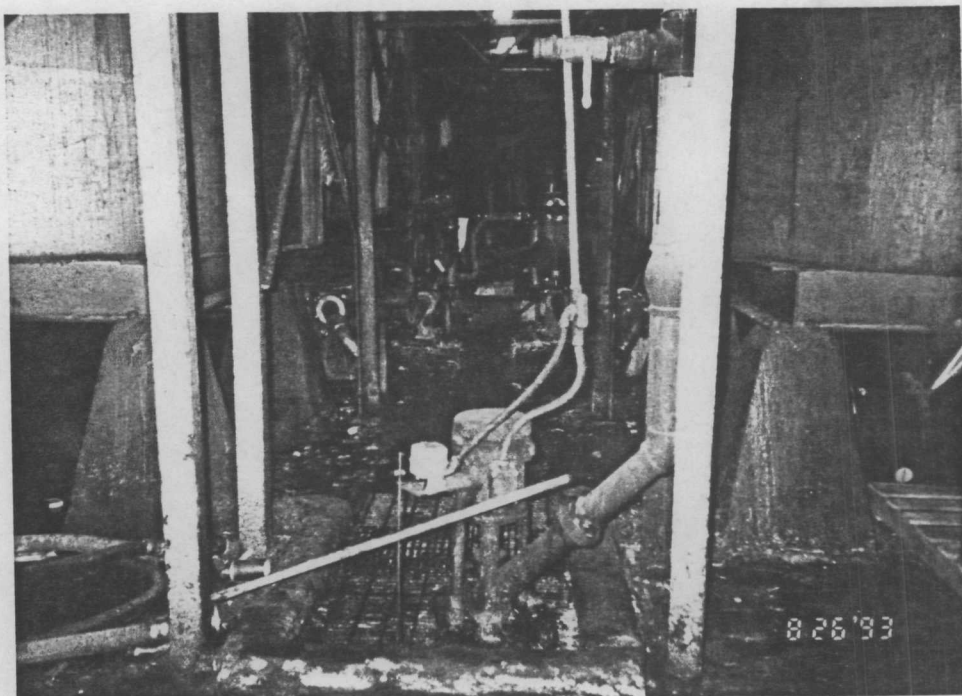
Photograph No. 10

Location: SWMU 5

Orientation: South

Date: 08/26/93

Description: This photograph shows the steel pit that currently provides additional secondary containment for the ASTs that are part of SWMU 5.



Photograph No. 11

Orientation: South

Location: A-Wing Buildings

Date: 08/26/93

Description: This photograph shows the area where all industrial wastewater from floor cleaning operations is discharged to the On-Site wastewater Pretreatment Plant (SWMU 6).



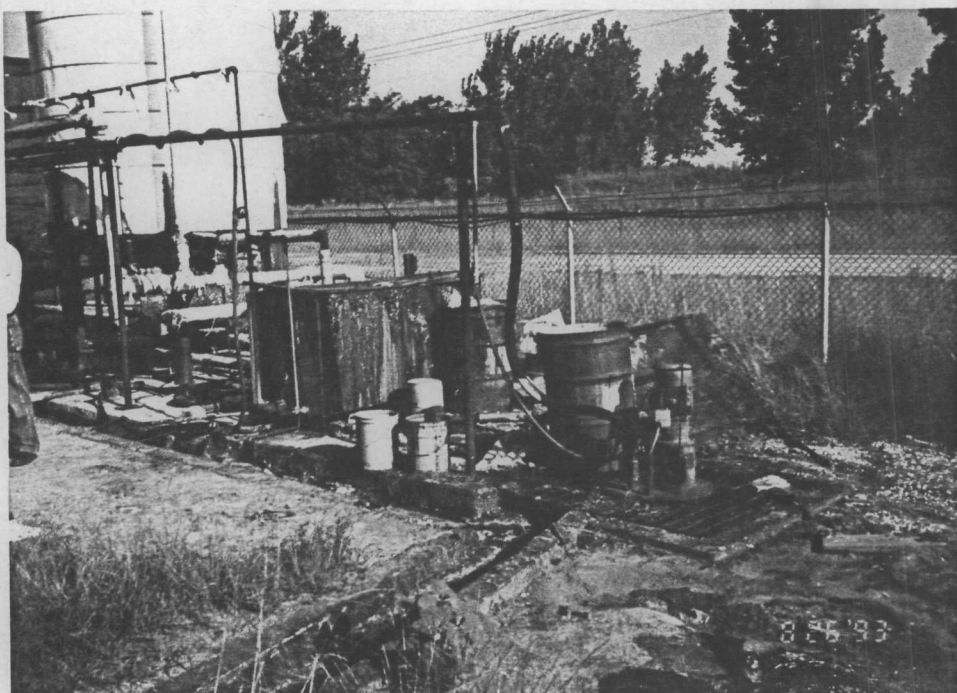
Photograph No. 12

Orientation: Southeast

Location: Drum Cleaning Area

Date: 08/26/93

Description: This photograph shows the steel hood where the empty drums of raw materials and wastes are cleaned. Wastewater from this unit is discharged directly to the On-Site Wastewater Pretreatment Plant (SWMU 6).



Photograph No. 13

Location: Hose Cleaning Area

Orientation: West

Date: 08/26/93

Description: This photograph shows the steel bin in which the polyacrylic contaminated hoses are cleaned. Wastewater from this unit is directly discharged to the On-Site Wastewater Pretreatment Plant (SWMU 6).



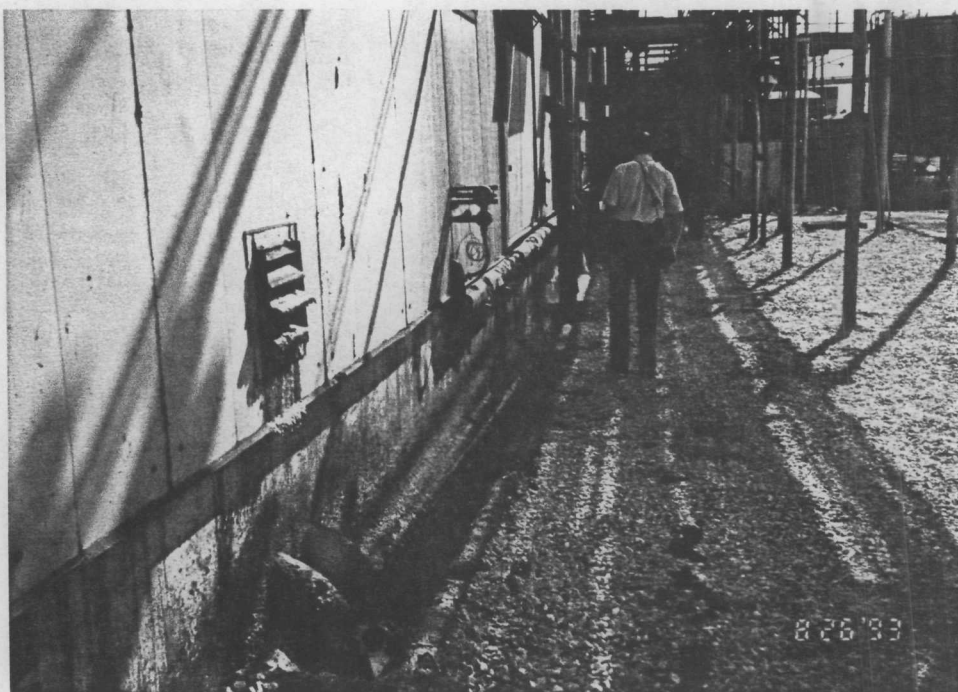
Photograph No. 14

Location: Basket Screen Cleaner

Orientation: Southeast

Date: 08/26/93

Description: This photograph shows the steel bin used to clean the basket screens. A basket screen with emulsion solids (white) is adjacent to the bin.



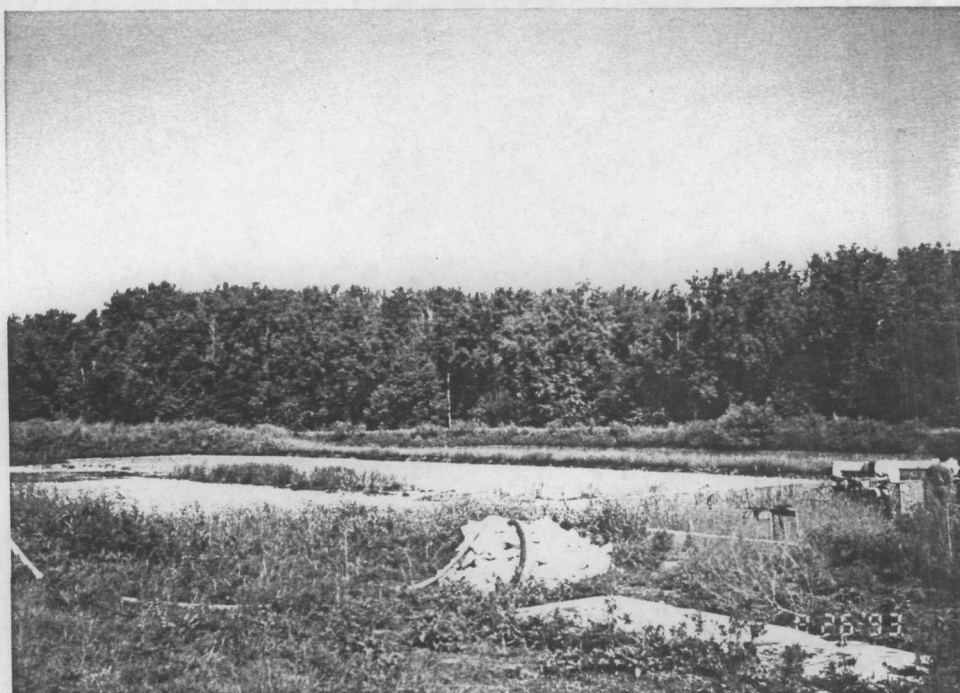
Photograph No. 15

Orientation: South

Location: Drainage Trench

Date: 08/26/93

Description: This photograph shows the drainage trench along one of the A-wing buildings that discharges to the On-Site Wastewater Pretreatment Plant (SWMU 6).



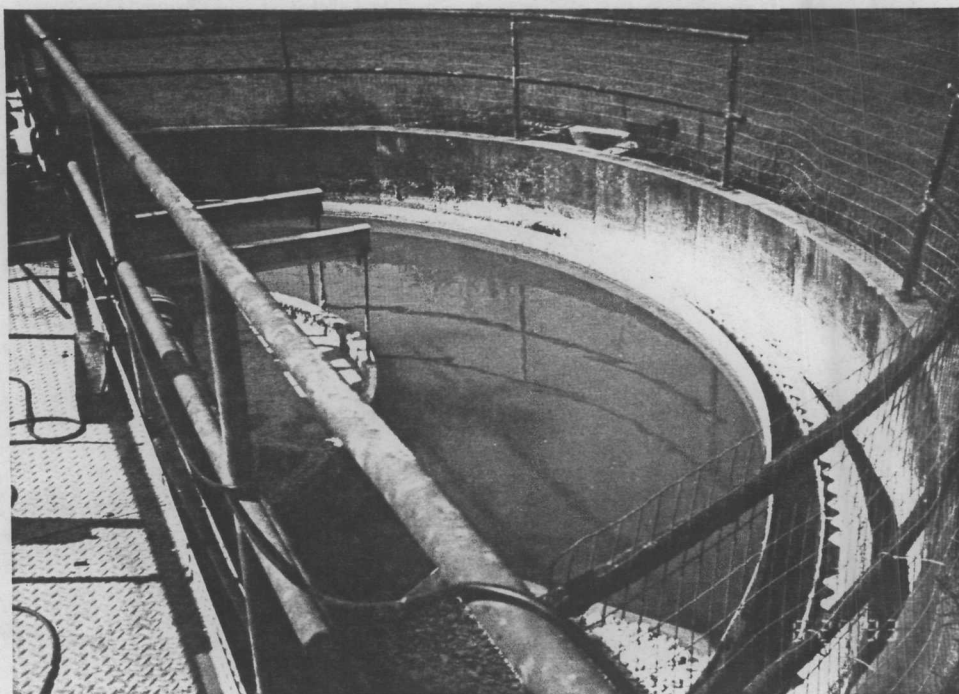
Photograph No. 16

Orientation: Northwest

Location: SWMU 6

Date: 08/26/93

Description: This photograph shows the grit settling basins that are part of the On-Site Wastewater Pretreatment Plant. Industrial wastewater throughout the facility is initially discharged to these basins before pretreatment.



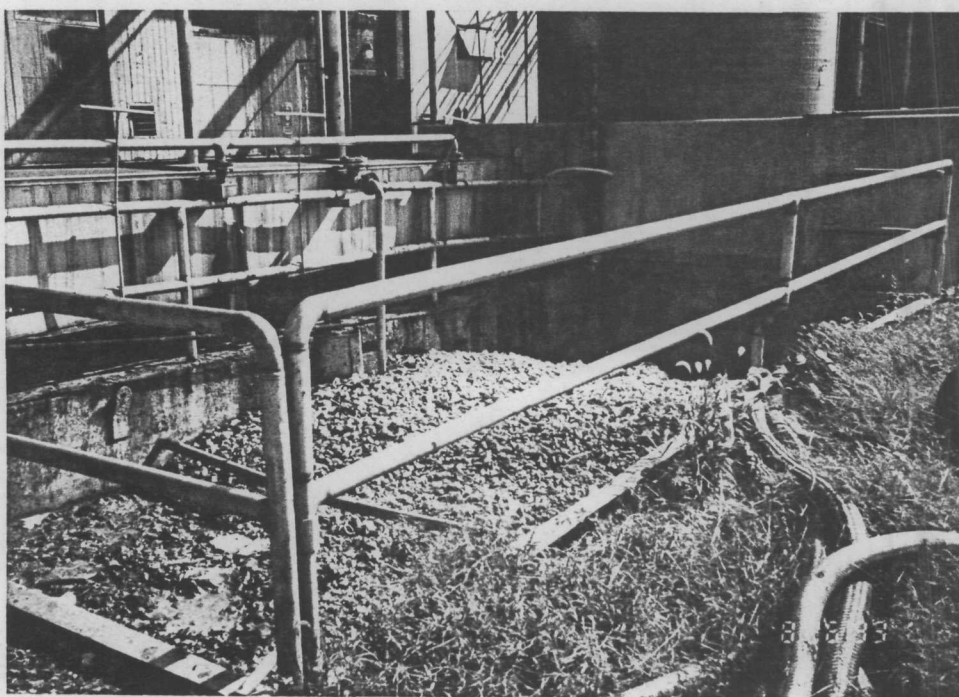
Photograph No. 17

Orientation: East

Location: SWMU 6

Date: 08/26/93

Description: This photograph shows the primary clarifier in which chemical treatment occurs. Chemical sludge from this unit is pumped to the Chemical Sludge Lagoons (SWMU 12) for disposal.



Photograph No. 18

Orientation: Southeast

Location: SWMU 7

Date: 08/26/93

Description: This photograph shows the A-Wing Neutralization Tank containing limestone. This tank is used to neutralize acidic waste solution.



Photograph No. 19

Orientation: Southeast

Location: SWMU 7

Date: 08/26/93

Description: This photograph shows the B-Wing Neutralization Tank containing limestone. This tank is also used for neutralizing waste acidic solution.



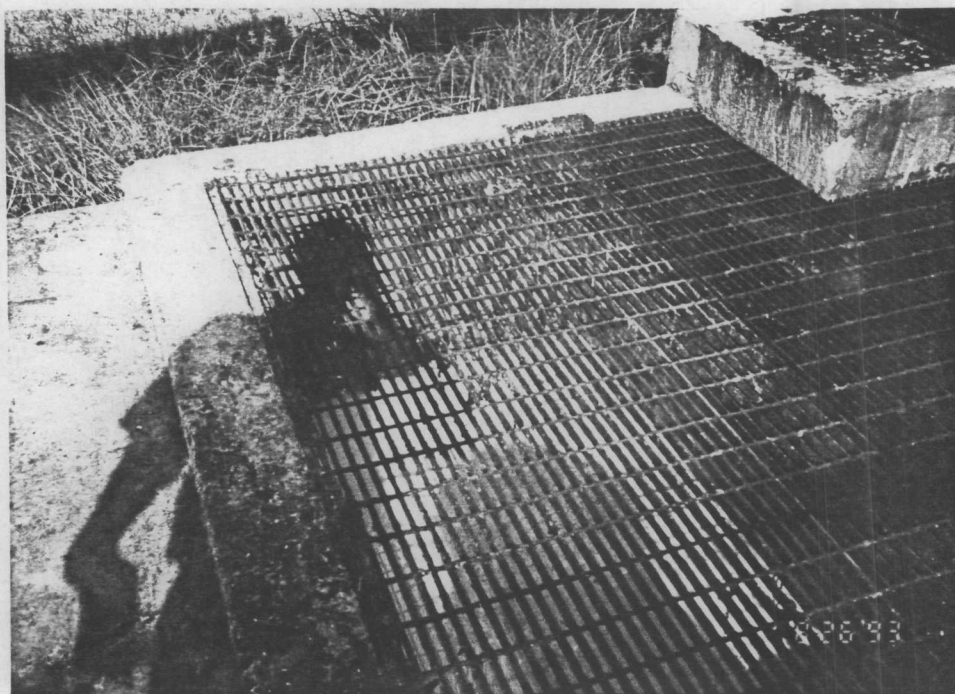
Photograph No. 20

Orientation: Southeast

Location: SWMU 8

Date: 08/26/93

Description: This photograph shows one of the Emulsion Wastewater Sumps (SWMU 8) located adjacent to Outfall 001C, used for noncontact cooling water discharges. Note the discharge pipe on top of the steel grate.



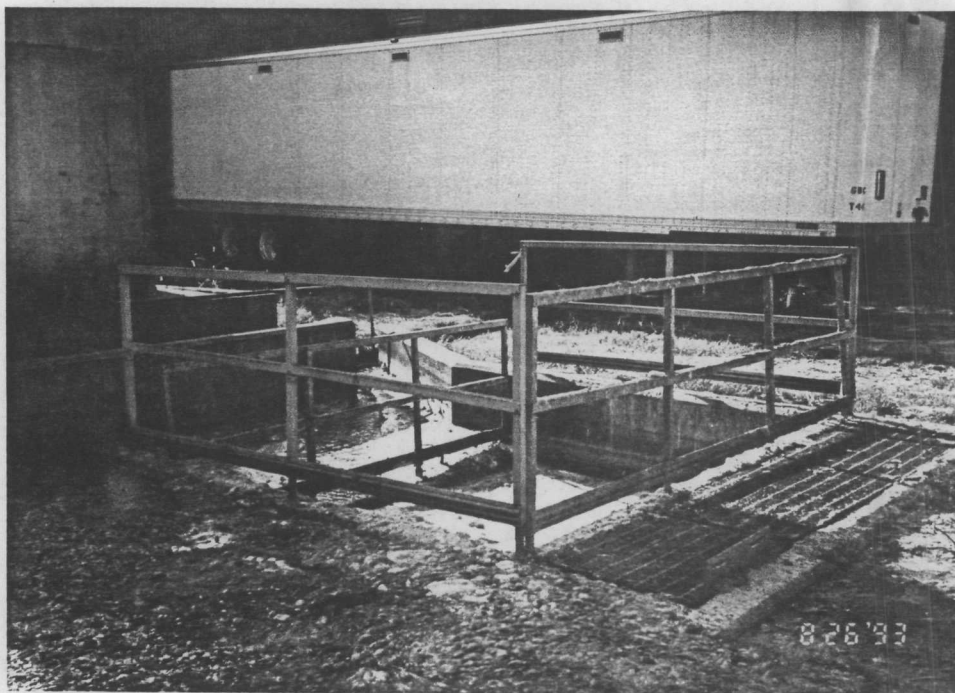
Photograph No. 21

Orientation: West

Description: This photograph shows the second Emulsion Wastewater Sump.

Location: SWMU 8

Date: 08/26/93



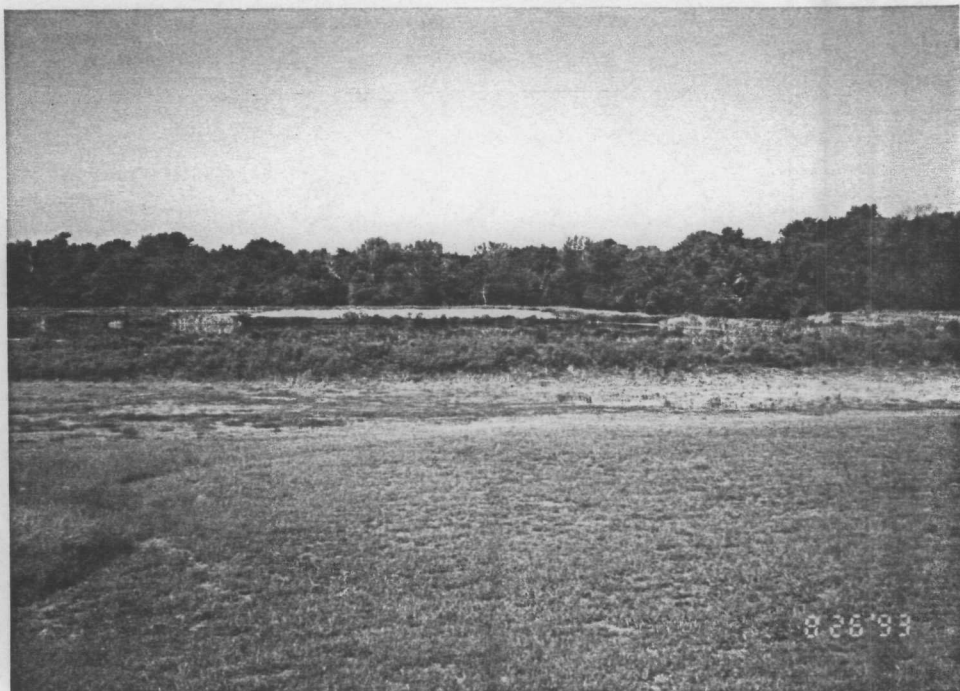
Photograph No. 22

Orientation: West

Description: This photograph shows the Hair Spray Resin Sump.

Location: SWMU 9

Date: 08/26/93



Photograph No. 23

Location: SWMU 12

Orientation: North

Date: 08/26/93

Description: This photograph shows the general location of the Chemical Sludge Lagoons.



Photograph No. 24

Orientation: North

Description: This photograph shows 4 55-gallon drums used to accumulate waste oil (nonhazardous) in building No. 4.

Location: SWMU 4

Date: 08/26/93

APPENDIX B
VISUAL SITE INSPECTION FIELD NOTES
(12 Pages)

Field Logbook No. NV-0002 Date 08/26/93

Project No. 309R05032 IL 90

Project Name National Starch & Chemical Co.

Inspection Team: Seshu Kulkarni, PRC

Robert Melton, PRC

07:50 Arrived on site

Temp around 75°F

Clear sky

USEPA # of the facility:

IL D 002 34569

0800 Had a introductory meeting

John A. Richardson, IEPA

Hiring Rep, National Starch

Doug Egan, National Starch

Seshu Kulkarni } PRC

Robert Melton }

Raj P. Murgis did not attend the meeting.

Employees Approx 250

Size of the facility (5 to 6 acres, 242 acres)

entire facility = 83 acres developed

A. Kulkarni

Field Logbook No. NV-0002 Date

Project No.

Project Name

Bought the facility in 1954
began production in 1956
before that it was a farm
ground.

Expanded since then.

to one expansion going
the water wells - 11 elevations

on facility

with contact water from condenser
to the River.

everything else goes through S.W. T.

Septic tank for rest rooms.

All domestic water goes to septic
system.

Shut down the DEC facility in
July 1993.

J. Kulkarni

Field Logbook No. NV-0002 Date 1

Project No. _____

Project Name _____

08.05.88 ^{OK} Finished goods / Bulk
Storage area
Sum 1 = 15,000 gallon of Chlorinated
Solvent waste
Stored on a concrete base.
Floor drains within 4 ft
inside the building
Stored along with several
raw materials
Off spec material from cleaning
ethyl acetate, toluene, isopropanol
methanol &
20 gallon (frustrated blocking
and one operators)
Several (4 or 5) 5 gallon pails
used for sampling the 15,000 gallon
bulk product. Waste accumulated
in this unit are dumped in 15,000 gal
tank.

1/1/88

Field Logbook No. NV-0002 Date _____

Project No. _____

Project Name _____

Satellite accumulation 5 gallon
pails throughout the logistic
building. Building 46-C
19 1/2 Satellite accumulation areas
from 5-gallon pails debris
are dumped into 55-gallon
drums from where it is pumped
to the 15,000 gallon tank.
Spills from reactors in Bldg
45 are drained through
floor drains to a sump (concrete)
from where it is discharged to
WWT. Right next to the
sump is a bin for cleaning
rags. Size of the sump (4'x4'x2')
Bin - Steel - 4'x4'x4'

J. K. Koster
147

Field Logbook No. NV-0002

Date

Project No.

Project Name

SWMU 3: Waste Lacquer
 Waste that are really solid
 and that can't be pumped
 into 15,000 gallon tank
 are stored in 55 gallon
 drums. 3-55 gallon
 drums are stored at this
 Unit. Floor drains are hooked
 up to WWTTP
 Concrete floor stored on wooden
 pallets
 All the lacquer left wastes
 are ~~not~~ called as spent
 polymeric wastes.

B-wing paper coatings
 Emulsion waste water from
 water based adhesive manufacturing

148

Field Logbook No. NV-0002

Date

Project No.

Project Name

Waste water from this area
 is drawn to the first floor
 from where it goes to WWTTP.
 Adjacent to the emulsion
 waste discharge point is the
 contact cooling water discharge
 point

Waste from Hair Spray manufacturing
 is collected in a concrete
 tank and discharged to
 the WWTTP. Semi-solid material
 at the surface of the tank
 is skimmed and dumped
 by WWTTP.

Green cleaner (solid adhesive
 waste)

149

Field Logbook No. NV-0002

Date

Project No.

Project Name

Saw storage area
(1' x 4.5' x 5') Steel tank
on concrete surface.
Cylindrical Cartridges Storage
Area

Dry Wash Storage Area.

Pow material and product
drying cleaning area
w/ from cleaning are
discharged to wet TP.

Steel hood x 4' high x 2' wide
over 7' long. Steel grates.
Exhaust provided.

Paper Coats & product storage
area. Spilled material from
pass on the tanks is cleaned

Field Logbook No. NV-0002

Date

Project No.

Project Name

Paper Coats Storage in
B. weig

and discharged to wet TP
Solid material goes to
wet Sinking lg.

Solvent-based lacquer Storage
General to store unmet
Samples from the lab -
Reused or disposed as haz
waste by lacquer dept

National Occasionally may
Styrene based paint spray -
Styrene Spilled during handling
and viscosity is checked in a
cup and discharged to wet TP

Field Logbook No. NV-0002

Date

Project No.

Project Name

Neutralization tank for mixed
wastes

Removed 2, 15,000 gallon
tanks from DEC area
sampled and came out clean
Spent solvent tanks

Amphic acid Spills area.

2. Settling ponds - clay lined
from here it goes to river
Clean. The pond when it
fills burned

All sludge from settling ponds
is trucked as chemical sludge
which from actual tank
system is bishydroxide

Field Logbook No. NV-0002

Date

Project No.

Project Name

Waste Sludge from clarifiers
and digester are shipped
in a lagoon behind the river
Sludge from 2ndary is sent
to incinerator and burned
When did they stop land
applying

Solid material from the
plant is disposed in the
ponds

Out fall from 2ndary
clarifier

combined effluent out fall
Stormwater is discharged to
the river

Waste Polymer from tank
Cleaning off with

Field Logbook No. NV-0002

Date

Project No.

Project Name

Ship 1 tank truck / week
Next month probably
nothing (to clean water
manager)
Distillation Unit - hand - win
Extractor
discontinued
Est. meeting
12:00
J. Muller

Field Logbook No. NV-0002

Date

Project No.

Project Name

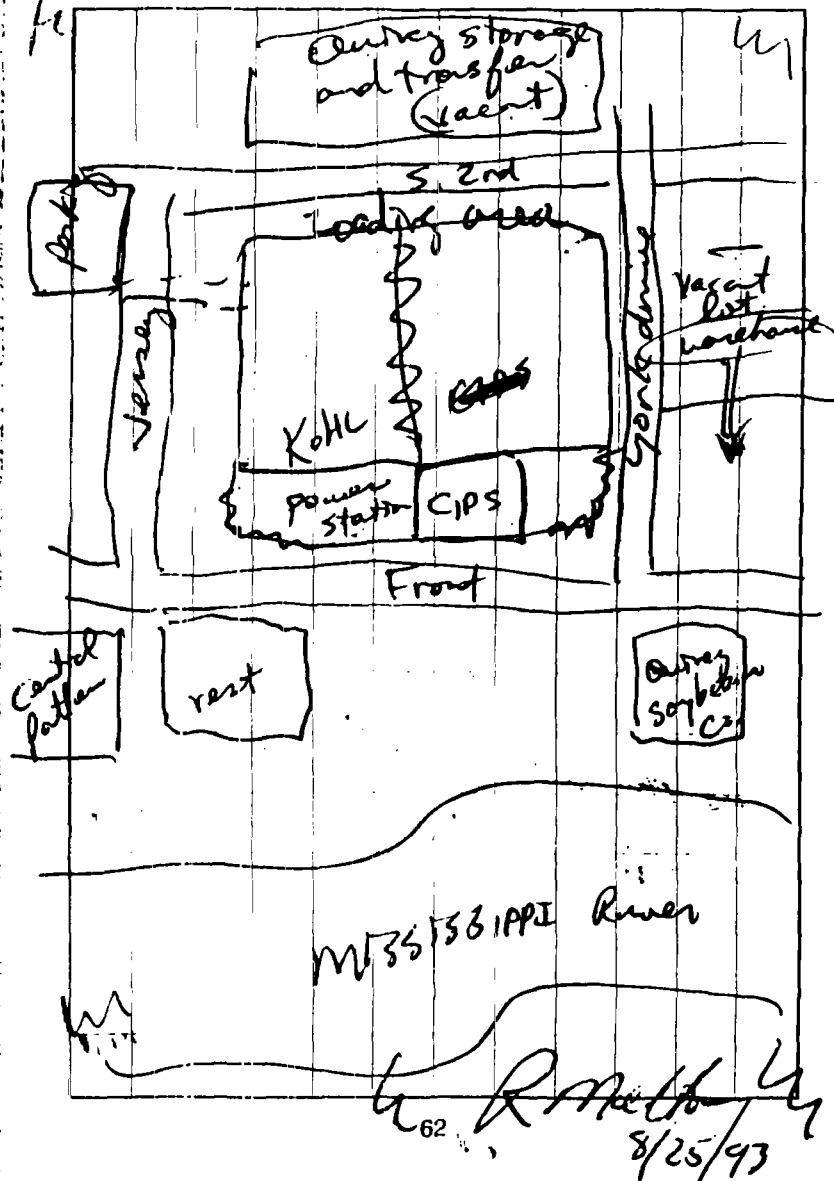
Field Logbook No.

NV-0003

Date

Project No.

Project Name



Field Logbook No.

NV-0003

Date

8/26/93

Project No.

National Starch & Chem.

Project Name

307605032IL70

arrived on site @ 0745
 weather, clear warm 75°

Photos Roll 1 fr. 1-24

Leo Hining - met with
 to discuss
 Dong Ban - purpose of
 visit. IEPA on site
 to assist with
 walkthrough,
 about ~~200~~ acres used including
 242-86 developed

R. Melton 8/26/93⁶³

Field Logbook No. NV-0003 Date

Project No.

Project Name

developed in 55
production in 56
prior land use were farm
land.

2825 begin walk through
and sign in.

fr. 1 Bulk storage tank
L-Bulk they went
> 90 day
facility wouldn't allow
picture of piping.

fr. 2 SAP next to product
tanks. excess drains
back into B-6.

R. Melton

8/26/93

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Field Logbook No. NV-0003 Date

Project No.

Project Name

18 SAPs located at product
19 tanks

L all small pails dry into
55 gal drum

fr. 3 7
SAPs included in the 19
2 more 55 gal. drums
located under 2
reactors.

fr. 4 lose cleaning bin and
Sump from process area
goes directly to WWTP.

fr. 5 product storage area
3 bag waste drums will
go back to process.

R. Melton

8/26/93

65

Field Logbook No. NV-0003 Date

Project No.

Project Name

B-wing power coalyze
fr. 6 emulsion wastewater
discharge sump #1
fr. 7 Nitric acid
neutralizing 1. on pit.
fr. 8 emulsion sump #2
with discharge to
a-w TP through piping.
fr. 9 Hair spray resin
concrete pit and
discharge to then
water drains through
pipe at bottom of pit
Solid material only
Remain at End
R. Melton⁶⁶
8/26/93.

Field Logbook No. NV-0003 Date

Project No.

Project Name

taken to work?
boster screen cleaner
material is dissolved
by Nitric acid bath
and spent acid
discharged to pit.
fr. 10 looking East
fr. 11 spent cartridges
for filtration in
ppoc 12 pit in
ppoc 12 pit in
and pit in
land fill.
R. Melton⁶⁷
8/24/93.

Field Logbook No. NV-0003 Date

Project No.

Project Name

fr. 12 down wash
area. direct
piping to sump
then to wwtp.
product drums washed after
contents removed then
sent to reconditioning.
sump handling discharge
from down washing and
tank line charging.

fr. 13 Bunk storage

fr. 14 SAI Installation
sandstone pit back
with joint

Ernesto
8/24/93 68

Field Logbook No. NV-0003 Date

Project No.

Project Name

fr. 15 discharge trench
from A-wing
water-based adhesives
collects floor washings,
tank cleanings and
internal spills.

fr. 16 neutralization tank for nitric
outside A-wing
also bucket cleaning
tanks.

- Raw material 1, will
into plant. 5. 1/1/93

- 1/1/93 def. A-wing
water-based paint loading

Ernesto
8/26/93 69

Field Logbook No. NV-0003

Date

Project No.

Project Name

Shut down
DEC starch reagent
(lean 45T spot
solvent test.
main
oxidize $\text{Na}_2\text{S}_2\text{O}_8$
scrubbed SO_2
combined with cooling
water then directly
to river.

West out of service
spring 6/93. due to discharge
of north stream.

R. Matton¹⁰
8/26/93

Field Logbook No. NV-0003

Date

Project No.

Project Name

fr. 17 sewer discharge
pumps into New
gravel filter to allow
settling then Northport
and discharges to
river TP.

fr. 18 primary clarifier

fr. 19 lagoons

fr. 20 stainless steel tank
used to be used for
put. in service in 1980
taken out 1980
has been used for waste
polymer from production

R. Matton¹¹
8/26/93

Field Logbook No. NV-0003

Date

Project No.

Project Name

fr. 21 tanks
~~the~~ isopropyl acetate
 and ethanol.
 about 7% water
 one tank had less
 material before
 distillation, one manager
 after.
 now shipped out
 tank in 10/10 month.
 Shipped to ()
 to Soligen, CA.
 world's largest "rotary"
 reactor.
 piped overhead to
 tank.

R. Melton⁷²
 8/26/93

Field Logbook No. NV-0003

Date

Project No.

Project Name

Heavy storage tank area
 Sump located at
 tanks
 fr. 22 Sump discharges
 directly to settling
 ponds.